God's Window Skywalk Project

Landscape and Visual Impact Assessment

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1	11 March 2022	Draft Short Report (Landscape and visual inputs report)	EW	-
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Structure of the report

The specialist study will be undertaken in compliance with Appendix 6 of GN 982 of 4 December 2014, as amended by Appendix 6 of GN 326 of 7 April 2017. Table 1 indicates how Appendix 6 has been fulfilled in this report.

Table 1: Indication of appliance with Appendix 6 of GN 326 of 7 April 2017

NEMA Regulations (2017) Appendix 6	Relevant sections
(1) A specialist report prepared in terms of these Regulations must contain -	
(a) details of -	
(i) the specialist who prepared the report; and	Appendix E
(ii) the expertise of that specialist to compile a specialist report, including a curriculum vitae;	Appendix E
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page 5
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.3 and 1.4
(cA) an indication of the quality and age of base data used for the specialist report;	Section 4.2.1
(cB) a description of existing impacts on site, cumulative impacts of the proposed development and levels of acceptable change;	Section 6 and 7.3
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 4.2.2
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 4.2
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying alternative;	Section 6
(g) an identification of any areas to be avoided, including buffers;	N/A
(h) a map superimposing the activity, including the associated structures and infrastructure on the environmental sensitivities of the site, including areas to be avoided, including buffers;	N/A
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment or activities;	Section 7
(k) any mitigation measures for inclusion in the EMPr;	Section 8 and 9
(l) any conditions for inclusion in the environmental authorisation;	Section 10
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	N/A
(n) a reasoned opinion -	
(i) as to whether the proposed activity, activities or portions thereof should be authorised;	Section 10
(iA) regarding the acceptability of the proposed activity or activities; and	Section 10
(ii) if the opinion is that the proposed activity, activities, or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 8 and 9

(o) a description of any consultation process that was undertaken during the course of preparing the specialist report	N/A
(p) a summary and copies, if any, comments received during any consultation process and, where applicable all responses thereto; and	N/A
(q) any other information requested by the competent authority.	No other information requested

Declaration of independence

I, Elmie Weideman declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if it results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may comprise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the ACT, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations, and all other applicable legislation;
- I have no, and will not engage in, conflicting interest in the undertaking of this activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing -any decision to be taken with respect to the application by the competent authority; and – the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority; all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Name of company:

CREATE Landscape Architecture and Consulting

Date: May 2022

Contents

List of figures

List of tables

Definitions

Phrase	Definition
Cumulative impacts	Cumulative impacts can result from individually minor but collectively significant activities taking place over a period.
Development	Any proposal that results in a change to the landscape and/ or visual environment.
Elements	Individual parts, which make up the landscape, for example trees and buildings.
Environmental Impact Assessment	A public process that is used to identify, predict, or cause the least damage to the environment at a cost acceptable to society, in the long term as well as in the short term.
Feature	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines.
Geography	The study of the Earth, the materials of which it is made, the structure of those materials, and the processes acting upon them.
Impact (Landscape and Visual)	A description of the effect of an aspect of the development on a specified component of the visual, aesthetic, or scenic environment within a defined time and space.
Issue (Landscape and Visual)	Issues are concerns related to the proposed development on a specified component of the visual, aesthetic, or scenic environment within a defined time and space.
Key Observation Point(s)	KOP(s) are specific points at which the proposed or existing facility will be most frequently viewed—typically roads, trails, pull-offs, or scenic overlooks. Digital photographs, along with GPS coordinates, may be taken from the KOPs and used for photo simulations to aid in the selection process.
Level 4 assessment	Visual impact assessment report by visual specialist or competent professional/. Review by independent, experienced visual specialist (if required). Identification of issues raised in scoping phase and site visit; Description of the receiving environment and the proposed project. Establishment of view catchment area, view corridors, viewpoints and receptors; Indication of potential visual impacts using established criteria; Inclusion of potential lighting impacts at night; Description of alternatives; mitigation measures and monitoring programmes as well as 3D modelling and simulations, with and without mitigation.
Landcover	The surface cover of the land usually expressed in terms of vegetation cover or the lack of it. Related to but not the same as Land use.
Land use	What land is used for based on broad categories of functional landcover, such as urban and industrial use and the different types of agriculture and forestry.
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction, of natural and/ or human factors.
Landscape and Visual Impact Assessment	A Landscape and Visual Impact Assessment simulates and predicts the significance and magnitude of the visual effects on the landscape.
Landscape character	These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur, they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.

Phrase	Definition
Landscape quality	A measure of the physical state of the landscape. It may include the extent to which typical landscape character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Mitigation measures	Actions that enhance benefits of a proposed development, or avoid, mitigate, restore or compensate for negative impacts.
Receptors	Individuals, groups, or communities who are subject to the visual influence of a project.
Scenic route	A linear movement route, usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.
Sense of place	The unique quality or character of a place, whether natural, rural, or urban allocated to a place or are through cognitive experience by the user. It relates to uniqueness, distinctiveness or strong identity and is sometimes referred to as genius loci meaning "spirit of the place".
Severity	The intensity of the impact on views, scenic or cultural resources.
Significance	The significance of impacts can be determined through a synthesis of the aspects produced in terms of their nature, duration, severity, extent, and probability.
Site	The cadastral boundaries i.e., Farm De Houtbosch 503 KT and Portion 2 of Farm Lisbon 531 KT.
Study Area	The geographical area falling within a 10km buffer from the proposed God's Window infrastructure.
Topography	The study of the forms and features of land surfaces.
View catchment area	A geographic area, usually defined by the topography, within which a particular project or other feature would generally be visible.
Viewshed	The outer boundary defining a view catchment area, usually along crests and ridgelines
Visibility	The geographic area from which the project will be visible.
Visual absorption capacity	The ability of an area to visually absorb development because of screening topography, vegetation, or structures in the landscape.
Visual character	The overall impression of a landscape created by the order of the patterns composing it; the visual elements of these patterns are the form, line, colour and texture of the landscape's components. Their interrelationships are described in terms of dominance, scale, diversity, and continuity. This characteristic is also associated with land use.
Visual exposure	The relative visibility of a project or feature in the landscape. Visual exposure is based on distance from the project to selected viewpoints. Visual exposure or visual impact tends to diminish exponentially with distance.
Visual intrusion	The level of compatibility or congruence of the project with the qualities of the area, or its sense of place. This is related to context and maintaining the integrity of the landscape or townscape.
Visual resource	The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

Acronyms

Acronym	Explanation
ALOS	Advanced Land Observation Satellite
BLM	Bureau of Land Management
BPEO	Best Practicable Environmental Option
CSIR	Council for Scientific and Industrial Research
DEA&DP	Department of Environmental Affairs and Development Planning
DEM	Digital Elevation Model
GIS	Geographic Information System
GPS	Global Positioning System
IDP	Integrated Development Plan
IEMA	Institute of Environmental Management and Assessment
ILP	Institute for Lighting Professionals
KOP(s)	Key Observation Point(s)
LED	Light Emitting Diode
LED	Local Economic Development
LVIA	Landscape and Visual Impact Assessment
MTPA	Mpumalanga Tourism and Parks Agency
NEMA	National Environmental Management Act
RMP	Resource Management Planning
SANBI	South African National Botanical Institute
SANLC	South African National Land Cover
SANS	South African National Standards
S.E. F	Strategic Environmental Focus
S&EIR	Scoping and Environmental Impact Report
SWOT	Strength, Weakness, Opportunities and Threats
TCLM	Thaba Chweu Local Municipality
VAC	Visual Absorption Capacity
VRM	Visual Resource Management

Abbreviations

Abbreviation	Explanation
amsl.	Above Mean Sea Level
°C	Degree Celsius
EA	Environmental Authorisation
m	Meter
km	Kilometre
Ltd	Limited
Pty	Proprietary
3D	Three Dimensional

1 Introduction

1.1 Project background

Zutari (Pty) Ltd have been appointed by the Mapulana Canyon (Pty) Ltd in partnership with the Mpumalanga Tourist and Parks Agency (MTPA) via a Public Private Partnership agreement to undertake the Environmental Impact Assessment (EIA) process, proposing the development of a new tourist facility (cantilevered walkway, building and associated infrastructure) at God's Window in the Blyde River Canyon Nature Reserve, Mpumalanga.

The objective of the MTPA is to provide for the sustainable management and promotion of tourism and nature conservation in the province and to ensure the sustainable utilisation of natural resources. The agency also has a long-term vision to upgrade all of the major attractions along the Panorama Route (a recognised scenic route of which the God's Window site forms part of). In order to market the area as a larger tourism destination, there is an opportunity to package the route as a whole, with an entry pass providing admission to all of the attractions along the rim of the Blyde River Canyon Nature Reserve.

A previous Scoping and Environmental Impact Report (S&EIR) was conducted in 2015 which also included a specialist visual impact assessment, however, various changes to the initial architectural design have led to a re application based on a new EIA with associated specialist studies.

1.2 Project location

The proposed God's Window Skywalk Project will be located on Farms De Houtbosch 503 KT and Portion 2 of Farm Lisbon 531 KT within the Thaba Chweu Local Municipality (TCLM), in the Ehlanzeni District Municipality, near the towns of Graskop and Pilgrim's Rest. God's Window is located on the rim of the Mpumalanga Escarpment, along the Panorama Route in the Blyde River Canyon, located in the Ehlanzeni District Mpumalanga Province which is in the north-eastern part of South Africa. The site is situated around 95km north of Nelspruit which is the largest city in the area. The project site lies 5km north of Graskop, which together with the towns of Sabie and Hazyview, forms a triangle of key tourism destinations along a scenic route.

A major factor contributing to the popularity of the area is the presence of the Kruger National Park which is one of the world's most important nature reserves. The Blyde River Canyon Nature Reserve is the second biggest attraction in Mpumalanga. The 57 km nature reserve belt runs from Graskop along the escarpment. The Reserve, and many of the attractions within it, is operated by the MTPA in association with the many communities along the edges of the Reserve.

Blyde River Canyon is part of a scenic route. This route starts at the town Graskop and includes God's Window, the Pinnacle, Bourke's Luck Potholes and the Three Rondavels. There are several waterfalls in proximity to God's Window including the Berlin Falls and Lisbon Falls. The canyon viewing points are accessible from the R532 by driving north from Graskop. The southernmost observation points, including God's Window, are accessible from the R534, (a spur loop road off the R532, indicated on the locality map) that provides some of the most spectacular views of the canyon.

The quality of the visitor experience currently offered is mixed, with the best maintained sites being God's Window, Bourke's Luck Potholes and the Three Rondavels. At these locations there are a range of craft stands, a tarmac parking area and ablution facilities. *(S.E.F.2015)*.

1.2.1 Study Area

The Study Area is defined by the area included in the 10km buffer around the infrastructure components, determined by the Zone of Theoretical Visibility (ZTV), refer to Figure B 1 in Appendix B.

1.2.2 Site

The site is defined as the cadastral boundaries i.e., Farm De Houtbosch 503 KT and Portion 2 of Farm Lisbon 531 KT.

1.3 Purpose of this report

According to Oberholzer, B.2005. and based on the criteria listed below, which includes the nature of the receiving environment and the nature of the project, the need for visual input is required:

- *The Study Area has proclaimed scenic routes;*
- *The Site has a recognized special character and sense of place;*
- *The Study Area has important tourism and recreation value;*
- *The Study Area has important vistas or scenic corridors; and*
- *The Study Area has visually prominent ridgelines or skylines.*

This report will serve to determine the character and Visual Absorption Capacity (VAC) of the landscape, the visibility of the proposed project, the potential landscape and visual impact on visual/scenic resources and the nature, extent, duration, magnitude, probability, and significance of impacts, as well as measures to mitigate negative impacts and enhance benefits. The detailed scope of works is indicated in Section 1.4 below.

1.4 Scope of work

In terms of the Guideline for Involving Visual and Aesthetic Specialist on EIA Processes (Oberholzer, B. 2005) the depth and scope of a Landscape and Visual Impact Assessment (LVIA) should be based on a combination of the sensitivity of the existing environment and the nature of the development. The type of environment and type of development are both divided into five categories, which are indicated in a matrix below.

Table 2: Categories of development and impact severity

Categories of development and impact severity. Type of environment	Category 1 development	Category 2 development	Category 3 development	Category 4 development	Category 5 development
Protected/wild areas of international, national or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high scenic, cultural, historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected
Areas or routes of moderate scenic, cultural, historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected
Areas or routes of low scenic, cultural, historical significance/disturbed	Little or no visual impact expected, possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites/run down areas/ wasteland	Little or no visual impact expected, possible benefits	Little or no visual impact expected, possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

Table 3: Key categories of development

Category 1 development: e.g., nature reserves, nature-related recreation, camping, picnicking, trails, and minimal visitor facilities.

Category 2 development: e.g., low-key recreation / resort / residential type development, small-scale agriculture / nurseries, narrow roads and small-scale infrastructure.

Category 3 development: e.g., low-density resort / residential type development, golf or polo estates, low to medium-scale infrastructure.

Category 4 development: e.g., medium density residential development, sports facilities, small-scale commercial facilities / office parks, one-stop petrol stations, light industry, medium-scale infrastructure.

Category 5 development: e.g., high density township / residential development, retail and office complexes, industrial facilities, refineries, treatment plants, power stations, wind energy farms, power lines, freeways, toll roads, large scale infrastructure generally. Large-scale development of agricultural land and commercial tree plantations. Quarrying and mining activities with related infrastructure.

Key categories of issues include:

Very high visual impact expected:

- Potentially significant effect on wilderness quality or scenic resources;
- Fundamental change in the visual character of the area; and
- Establishes a major precedent for development in the area.

High visual impact expected:

- Potential intrusion on protected landscapes or scenic resources;
- Noticeable change in visual character of the area; and
- Establishes a new precedent for development in the area.

Moderate visual impact expected:

- Potentially some effect on protected landscapes or scenic resources;
- Some change in the visual character of the area; and
- Introduces new development or adds to existing development in the area.

Minimal visual impact expected:

- Potentially low level of intrusion on landscapes or scenic resources;
- Limited change in the visual character of the area; and
- Low-key development, similar in nature to existing development.

Little or no visual impact expected:

- Potentially little influence on scenic resources or visual character of the area;
- Generally compatible with existing development in the area; and
- Possible scope for enhancement of the area.

From the above, the severity of the impact determines the level of the assessment:

Table 4: Categorisation of approaches used for visual assessment

Approach	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	Very high visual impact expected
Level of visual input recommended	Level 1	Level 2	Level 3	Level 4	

Through the application of the LVIA methods of assessment as presented in the above section and tables, it was determined that the proposed project can be defined as a Category 4 development (medium scale infrastructure). According to Oberholzer, B. (2005), a theoretical **high visual impact** is expected.

Based on the desktop study and as confirmed by the site visit there is a potential intrusion on protected landscapes and scenic resources with a noticeable change in visual character which could establish a new precedent in the Study Area. In line with the above, a Level 4 Assessment was conducted.

Typically, a Level 4 Assessment includes:

- Identification of issues raised in scoping phase (if applicable)
- Description of the receiving environment and the proposed project;
- Establishment of view catchment area, view corridors, viewpoints, and receptors;
- Indication of potential landscape and visual impacts using established criteria;
- Inclusion of potential lighting impacts at night;
- Description of alternatives (where applicable), mitigation measures and monitoring programmes; and
- 3D modelling and simulations, with and without mitigation.

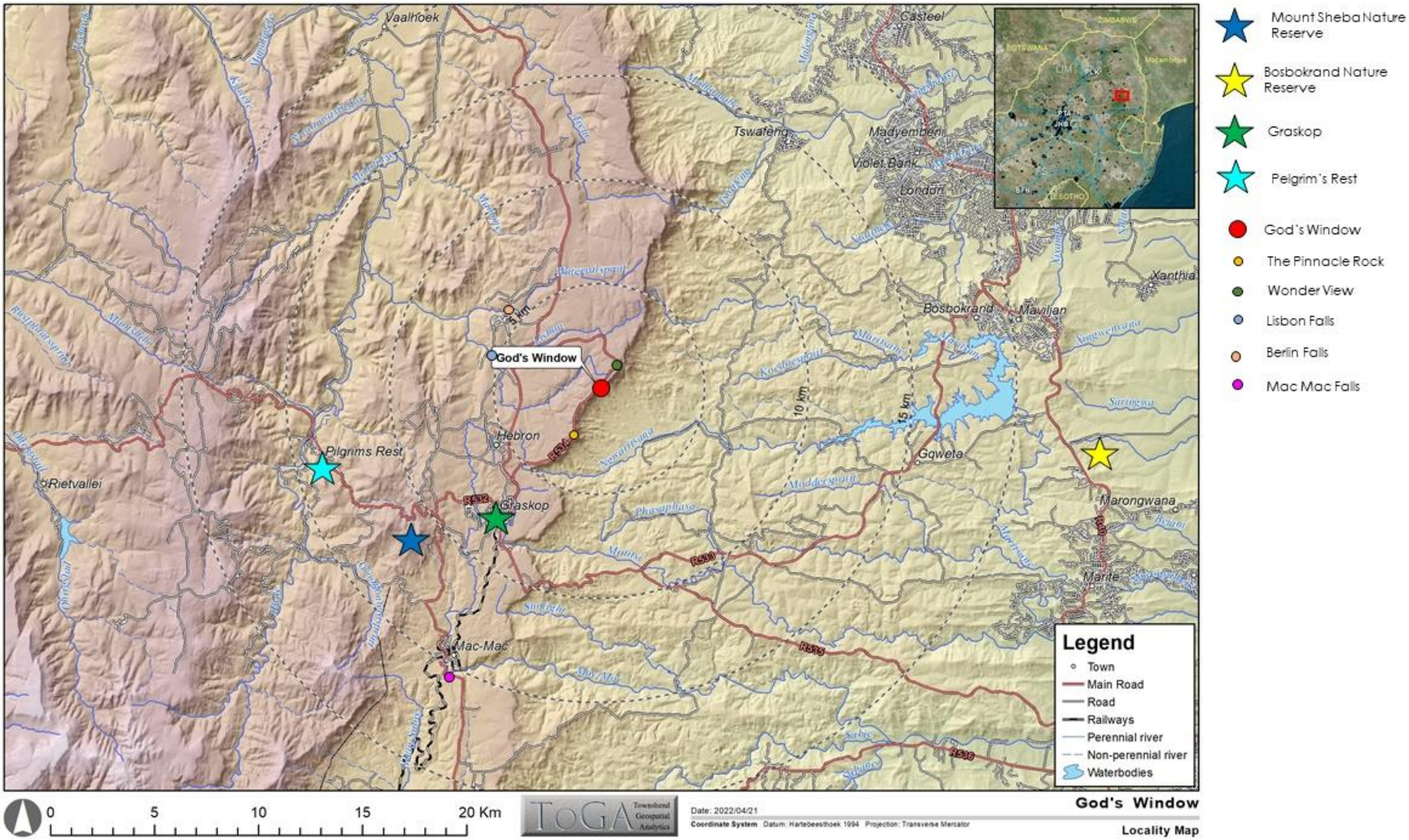

Figure 1: Locality map

2 Legislation and Guidelines

2.1 Policies and Plans

Oberholzer B, (2005) indicates that current South African environmental legislation governing the EIA process (which may include consideration of visual impacts if this is identified as a key issue of concern) is the National Environmental Management Act (NEMA) (Act 107 of 1998). This includes the 2014 NEMA EIA regulations as amended (published in General Notice (GN) No. R.982 as well as R 983 Listing Notice 1, R 984 Listing Notice 2, and R 985 Listing Notice 3).

In addition, the following acts and guidelines are applicable (Oberholzer, B. 2005):

- National Environmental Management: Protected Areas Act (Act 57 of 2003). This act is intended to identify and protect natural landscapes;
- National Heritage Resources Act (Act 25 of 1999). This provides legislative protection for listed or proclaimed sites, such as urban conservation areas, nature reserves and proclaimed scenic routes;
- Advertising on Roads and Ribbons Act (Act 21 of 1940);
- Visual pollution is controlled, to a limited extent, by the Advertising on Roads and Ribbons Act (Act 21 of 1940), which deals mainly with signage on public roads; and
- Municipal Systems Act (Act 32 of 2000)

2.1.1 Thaba Chweu Local Municipality Integrated Development Plan (IDP)

It is compulsory for all municipalities to initiate an Integrated Development Process and the most recent (2021) IDP for the TCLM is currently available. To prepare a five-year strategic development plan for the area under their control the IDP process, specifically the spatial component, is based in certain areas and provinces on a bioregional planning approach to achieve continuity in the landscape and to maintain important natural areas and ecological processes. The vision according to the TCLM's Draft IDP is, "*that of becoming a Custodian of Sustainable Service Delivery, Economic Development and Good Governance*". The proposed God's Window Skywalk Project is in line with these priorities.

The municipality is well known for its tourism attractions but there is no direct reference with regards to the God's Window site, however the municipality has in this current IDP identified Local Economic Development (LED) and tourism as one of its objectives to drive growth in the municipality. According to the Strength, Weakness Opportunities, Threats (SWOT) analysis, scenic landscapes (such as viewed from the God's Window Site) and the support of the development of local recreational facilities have both been identified as a strength and opportunity. Furthermore, it has been stipulated that the municipality's priority for the next 5 years includes the facilitation, exploitation, and coordination of tourism opportunities (amongst others) which are aimed at socio economic improvement.

2.2 Guideline documents

2.2.1 Guideline for visual and aesthetic specialists in the EIA process

This guideline was coordinated by the Council for Scientific and Industrial Research (CSIR), compiled by Bernard Oberholzer Landscape Architects, and issued by the Provincial Government of the Western Cape under the Department of Environmental Affairs and Development Planning (DEA&DP). The purpose of this guideline was to provide decision-makers with adequate and appropriate information about the potential positive and negative visual and aesthetic impacts of a proposed development and any associated management actions in order to make an informed decision on whether or not to approve, proceed with, or finance the development.

Visual resources have value in terms of the regional economy and inhabitants of the region. Furthermore, these resources are often difficult to place a value on as they normally also have cultural or symbolic values. Therefore, LVIA's are to be performed in a logical, holistic, transparent, and consistent manner. Oberholzer, B. (2005) identifies the following concepts to form an integral part of the LVIA process:

- Visual resources include the visual, aesthetic, cultural and spiritual aspects of the environment, which contribute toward and define an area's sense of place;
- Natural and cultural landscapes are inter-connected and must be considered as such;
- All scenic resources, protected areas, and sites of special interest within a region need to be identified and considered as part of the LVIA;
- All landscape processes such as geology, topography, vegetation, and settlement patterns that characterise the landscape must be considered;
- Both quantitative criteria, such as 'visibility' and qualitative criteria, such as aesthetic value or sense of place must be included as part the study;
- LVIA's must inform the EIA process in terms of visual inputs; and
- Public involvement must form part of the process.

The guideline furthermore recommends that the LVIA process identifies the Best Practicable Environmental Option (BPEO) based on the following criteria:

- Long term protection of important scenic resources and heritage sites;
- Minimisation of visual intrusion on scenic resources;
- Retention of wilderness or special areas intact as far as possible; and
- Responsiveness to the area's uniqueness, or sense of place.

2.2.2 International Guidelines

In addition to Oberholzer, B. (2005) the following guidelines provides detail of international best practice and have also been consulted. Together these documents provide a basis for the level of approach:

Guidelines for LVIA's

The Landscape Institute and the Institute of Environmental Management and Assessment (IEMA, 2013) have compiled which outlines the best practice in landscape and visual impact assessment and is a key guideline for LVIA in the United Kingdom. "The principal aim of the guideline is to encourage high standards for the scope and context of landscape and visual

impact assessments, based on the collegiate opinion and practice of the members of the Landscape Institute and the Institute of Environmental Management and Assessment. The guidelines also seek to establish certain principles and will help to achieve consistency, credibility and effectiveness in landscape and visual impact assessment, when carried out as part of an EIA" (IEMA, 2013).

The guideline states that 'Landscape encompasses the whole of our external environment, whether within village, towns, cities or in the countryside. The nature and pattern of buildings, streets, open spaces, and trees – and their inter-relationships within the built environment – are an equally important part of our landscape heritage" (IEMA, 2013). The guideline identified the following reasons why landscape is important in both the urban and rural context:

- Landscape is an essential part of our natural resource base;
- Landscape is a reservoir of archaeological and historical evidence;
- Landscape is an environment for plants and animals (including humans);
- Landscape is a resource that evokes sensual, cultural, and spiritual responses and contributes to our urban and rural quality of life; and
- Landscape is a valuable recreation resource.

Visual Resource Management Methodology

The Visual Resource Management (VRM) System is a system which were developed by the US Department of The Interior Bureau of Land Management. This system recognises that landscapes (urban as well as rural) have a variety of visual values. These different values warrant different levels of management, and it is therefore necessary to systematically identify and evaluate these values.

- Manual section 8410

Landscape values are identified through the VRM inventory (Manual Section 8410) and are considered with other resource values in the Resource Management Planning (RMP) process.

- Manual section 8431

The contrast rating system provides a systematic means to evaluate proposed projects. It also provides a means to identify mitigating measures that can be taken to minimize adverse visual impacts.

- Use of basic landscape design principles

Designers have used the basic design elements of form, line, colour, and texture to describe and evaluate landscapes for hundreds of years. Modifications in a landscape which repeat the landscape's basic elements are said to be in harmony with their surroundings. Modifications which do not harmonize often look out of place and are said to contrast or stand out in unpleasing ways. These basic design elements and concepts have been incorporated into the VRM system to lend objectivity, integrity, and consistency to the process.

3 Assumptions, exclusions, and limitations

- The technical designs and layouts provided are conceptual and based on "worst case scenario" viz. maximum allowable height/s and area coverage, therefore, the possibility of adaption exists. Should there be any significant changes in the designs of the proposed infrastructure, these changes may have to be re-assessed;
- The maximum heights (confirmed by the architect and engineer) for the various infrastructure components are indicated in the table below:

Infrastructure component	Height above sea level
Roof	1657.66 m amsl.
Corten upstand at the museum entrance	1666. 30 m amsl.
Skybridge	1644 m amsl
Skywalk	1651.10 m amsl

- Access will be from the R534, using the existing entrance;
- No alternative site was available at the time of this study, meaning that no comparison study could be done to compare different outcomes per site selection;
- Only the main building will be lit at night (interior and exterior security lighting);
- No specific national legal requirements for LVIA currently exist in South Africa; however, the assessment of visual impacts is required by implication when the provisions of relevant acts governing environmental management are considered and when certain characteristics of either the receiving environment or the proposed project indicate that visibility and aesthetics are likely to be significant issues and that visual input is required (Oberholzer, B.2005);
- Determining a visual resource in absolute terms is not achievable. It is a complex procedure since it is determined through a combination of quantitative (visibility) and qualitative (aesthetic value) criteria. Therefore, a LVIA cannot be entirely objective in this sense. Individuals will evaluate a landscape differently, based on experience, culture, and social background;
- Various factors can enhance or reduce the visual impact of the proposed project, for instance, vegetation or structures near a receptor's view of the proposed project. Other factors include weather, climatic conditions, and seasonal change. It is therefore difficult to determine the visual impact of the proposed project from the viewpoint of each individual receptor;
- The viewsheds resulting from the Digital Elevation Model (DEM) and as illustrated in this report, indicate the areas from which the proposed project is likely to be visible and do not take local vegetation cover (landcover) and anthropogenic structures into account as these factors are too variable. Potential sensitive receptor points have therefore been ground-truthed during the site assessment;
- Key Observation Points (KOPs) were not visited at night;
- Even though the project consists out of different infrastructure components, i.e., the main building, Skywalk and Skybridgetheir landscape and visual impacts will not be rated individually.
- This assessment did not consider potential future development within this section of the Blyde River Canyon and along the scenic route (R534), which could potentially lead to increased accessibility for the public to certain KOPs;
- KOPs represent either a typical view from a sensitive viewing location or the range of impacts associated with the project. These locations are usually located on a

commonly travelled route from which the project will be visible, or other likely observation points;

- For the purpose of the impact assessment, it is assumed that the construction period will be between 1 -5 years;
- Various timber plantation stands within the Study Area screen views towards the site. It is unknown when these large sections of tall trees will be felled, and it is assumed that all sections will not be felled at once. The potential landscape and visual impacts were based on the current status quo as recorded during the site visit; and
- Viewing deck locations at the current God's Window site will remain in their current position.

4 Methodology

4.1 Impact assessment methodology

To allow for sufficient consideration, impacts were assessed using a common, defensible method of assessing significance that will enable comparisons to be made between risks/impacts and will enable authorities, stakeholders, and the client to understand the process and rationale upon which risks/impacts have been assessed. The method to be used for assessing risks/impacts is outlined in Appendix A and is the standard Zutari rating system.

4.2 Landscape and visual assessment methodology

The methodology is based on the following sources as set out in section 2.2. A combination of the listed assessment criteria allows for increased objectivity and consistency of which further detail is provided in Appendix B.

4.2.1 Desktop study

The desktop investigation served as a planning basis for the site visit by identifying preliminary areas of importance (focus areas) in terms of potential landscape and visual impacts. The current context was understood prior to conducting the site visit, which involved a study of the existing environment in terms of topography, land cover, land use and vegetation type.

The LVIA, together with the viewshed analyses, (which indicates the outer boundary and potential visual receptors), are based on the following relevant information sources:

- Documents and information sources such as that mentioned under Sections 2.1 and 2.2;
- Aerial photography obtained from Google Earth and detailed 3D models of the cliff façade and hilltop;
- Elevations, plans and 3D images from the architect of the proposed building within its context; and
- The current EIA and Visual Impact Assessment (VIA) which were completed by S.E.F in 2015.

The terrain information was derived from the Advanced Land Observation Satellite (ALOS) 30 data which became available to the general public in 2015/16. The base topographic data is from MapIT South Africa, 2015. Both these data sets are of very good quality. The desktop study included a study of the existing environment in terms of topography and landcover data information from the South African National Land-Cover (SANLC) 2018 raster dataset is based primarily on the new gazetted land-cover classification standard (SANS 19144-2) with 73 classes of information and is available on an open license agreement. It is of excellent quality.

4.2.2 Site visit

A site visit was undertaken from 23 – 24 April 2022 during the end of the rainy season with less cloud cover and with an increase in overall visibility (averaging 8km). The site visit included a drive around the surrounds to determine the visual context within which the proposed project is to be developed. Areas of potential important observation points (as discussed in this report) was assessed and recorded by making use of a hand-held Global Positioning System (GPS) device to confirm these viewpoints and potential sensitive receptors. High resolution, geo referenced photos was taken from KOPs within the Study Area towards and from the proposed project location. Other photos, which represent the unique sense of place, land use and specific landscape character types were also captured during the site visit.

4.2.3 Description of the affected environment

Baseline phase

Establishing the landscape baseline

The landscape baseline aims to provide an understanding of the landscape that may be affected and was established through a desktop study and a site visit (as indicated in Sections 4.2.1 and 4.2.2) which identifies and records the character of the landscape, the elements, features, aesthetic, and perceptual factors as well as the value attached to it. The landscape baseline will be established through the landscape character, landscape value, landscape quality, VAC, visual intrusion, and sense of place.

Establishing the visual baseline

The aim of the visual baseline is to establish the area in which the development may be visible, the different groups of people who may experience views of the proposed development, the places where they will be affected, the nature of the views and the visual amenity at these points. The visual baseline was established through identifying the visibility and visual exposure, the visual receptors and the KOPs (which were confirmed during the site visit).

Assessment phase

Assessment of landscape impacts

An assessment of landscape effects deals with the effects of change and development on the landscape as a resource. The Study Area was considered and includes the site itself and the full extent of the wider landscape around it, which the proposed development will influence in a significant manner. This was based on the maximum extent of the area from which the development is potentially visible, defined as the viewshed or ZTV as described earlier.

Predicting landscape impacts (effects)

Once the baseline information regarding the landscape is established and confirmed this can be combined with understanding of the details of the proposed development to identify and describe landscape impacts (effects), the initial step was to:

- Identify the components (individual elements or key features) of the landscape that are likely to be affected by the scheme (landscape receptors).

The second step was to:

- Identify interactions between the landscape receptors and the different components of the development during all the different project stages; and

- Direct, indirect as well as cumulative impacts (effects) will be included.

Assessing landscape impacts (effects)
The identified landscape impacts (effects) will be assessed to determine their significance.

Assessment was based on:

- Sensitivity of landscape receptors (determined through the VAC and overall susceptibility to the type of change);
- Value of the landscape receptor (landscape character type/s and individual elements and features contributing to landscape character); and
- Severity (magnitude) of landscape impacts (effects) related to size, scale, geographic extent, duration, and reversibility of landscape effects.

Assessment of visual impacts
The assessment of visual impacts (effects) deals with the effects of change and development on the views available to people and their visual amenity.

Predicting visual impacts (effects)
Likely impacts (effects) on potential visual receptors were identified, to determine these impacts, the following was considered:

- The nature of the view (full or partial);
- The proportion of the infrastructure which will be visible;
- The distance of the viewpoint to the proposed development; and
- Whether the view is stationary or transient

Assessing visual impacts (effects)
The identified visual impacts (effects) were assessed to determine their significance. The assessment was based on:

- The sensitivity of visual receptors (susceptibility of visual receptors to change, mainly based on the occupation or activity at a specific viewpoint and the extent to which their attention may be focused on the view);
- Value attached to the views; and
- Severity (magnitude) of the visual effects related to size/scale, geographical extent, duration, and reversibility of visual effects.

Assessing cumulative landscape and visual impacts
Cumulative landscape effects can impact on either the physical fabric or character of the landscape. Cumulative visual impacts can be caused by combined visibility which occurs where the receptor is able to see two or more developments from one viewpoint and/or sequential effects which occur when the receptor must move to another viewpoint to see different developments. Types of cumulative landscape and visual effects includes:

- Extension to an existing development;
- Filling of an area with similar types of development;
- Interactions with different types of development;
- Incremental change because of successive individual developments; and
- Landscape and visual impacts (effects) resulting from future actions.

Mitigation of landscape and visual impacts

General forms of visual mitigation include:

- Prevention/avoidance;
- Reduction by means of:
  - Adjustment of site levels;
  - Use of appropriate form, detail design, materials and finishes where it is not desirable or practical to screen; and
  - Alterations to landform together with structured planting;
- Avoiding or reducing obtrusive lighting, consideration was given to different ways of minimising light pollution; and
- Offset, remedy, or compensate.

Summarised approach

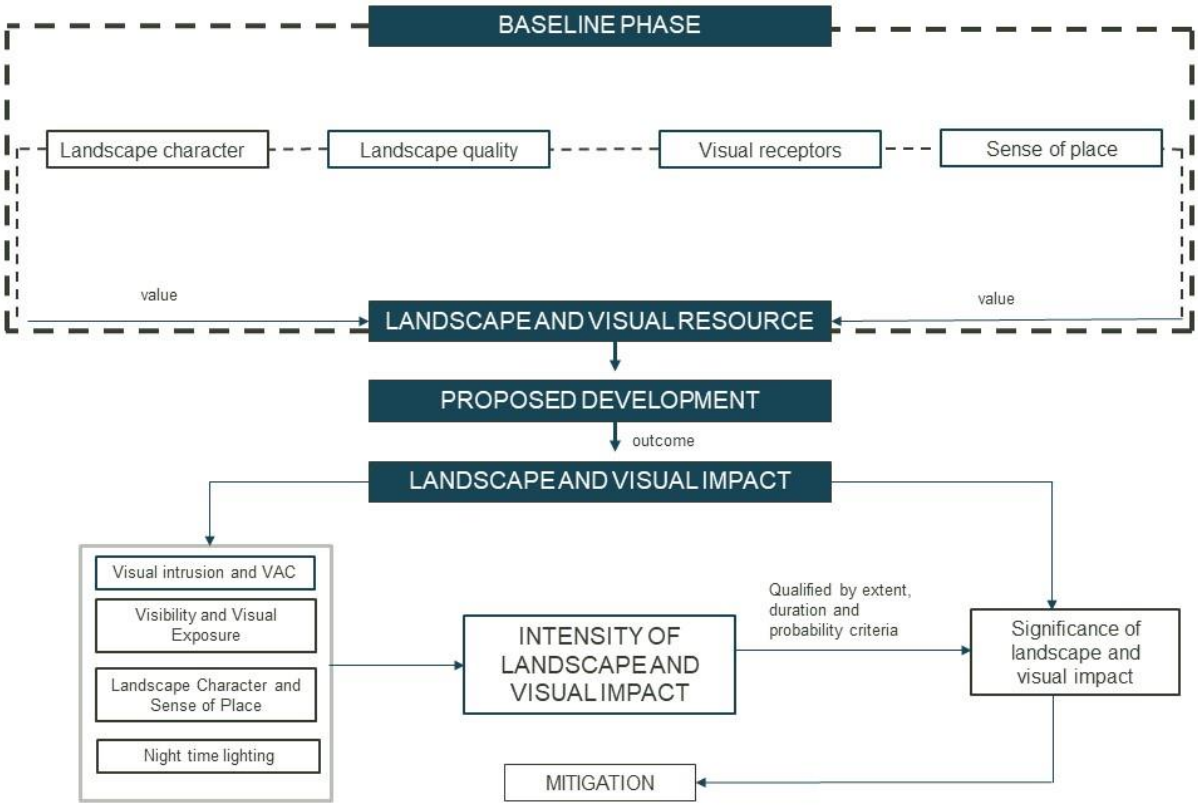

Figure 2: Landscape and visual impact approach

5 Main infrastructure components

5.1 Project phases

5.1.1 Construction phase

The construction period was not known at the time of writing this report. For impact assessment purposes it is expected to continue over a period of 1 - 5 years. Construction activities includes the following:

- Construction materials will be off-loaded, from delivery vehicles and trucks, and stockpiled on site (this will take place for the duration of the construction period);
- The footprint of the new proposed building will be cleared, and foundations will be laid;
- The proposed main building will be constructed;
- The Skywalk will be constructed;
- The Skybridgewill be constructed;
- The carpark will be constructed;
- The entrance will be upgraded;
- Existing footpaths will be upgraded (suggestions with regards to the design is made in section 9.2 of this report); and
- Existing viewpoints will be upgraded (suggestions with regards to the design is made in section 9.2 of this report).

5.1.2 Operational phase

The relevant major visible elements of the proposed project are expected to include the following:

- The Skywalk structure with controlled access;
- The Skybridgealong the escarpment;
- The main building, hosting various activities as indicated in section 5.2;
- The upgraded entrance and extended carpark;
- The upgraded footpaths and viewing points; and
- Lighting (mainly associated with security lighting in the carpark and building).

5.2 Current architectural concept

The proposed Skywalk Project at God's Window is envisaged to be a cantilevered walkway, which extends over the canyon's edge. This facility will offer and will expose the visitor to this exciting experience. There is existing access to the God's Window site along the R534 which forms a loop road with the R532 from Graskop (refer to Figure 1). This road primarily provides road access to view points, and to the surrounding pine tree plantations. In order to protect the sanctity of the plateau landscape, the landscape will be "cut" and lifted to maintain the natural vegetation to flourish. This concept is illustrated in Figure 3 below.

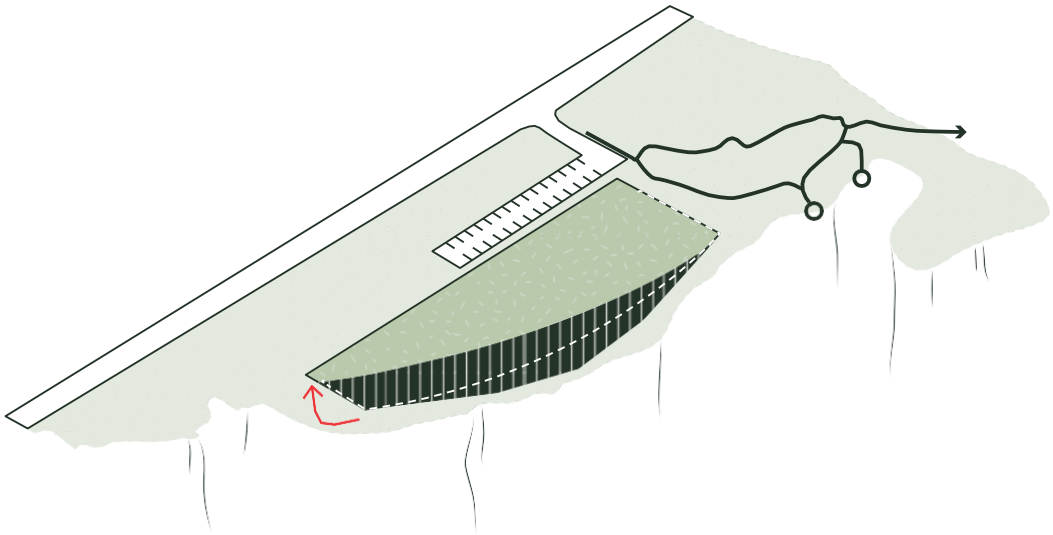

Figure 3: The concept of cutting the landscape

Rooms and places are inserted underneath the lifted landscape which will accommodate various activities such as a museum, event spaces and restaurants. This is illustrated in Figure 4.

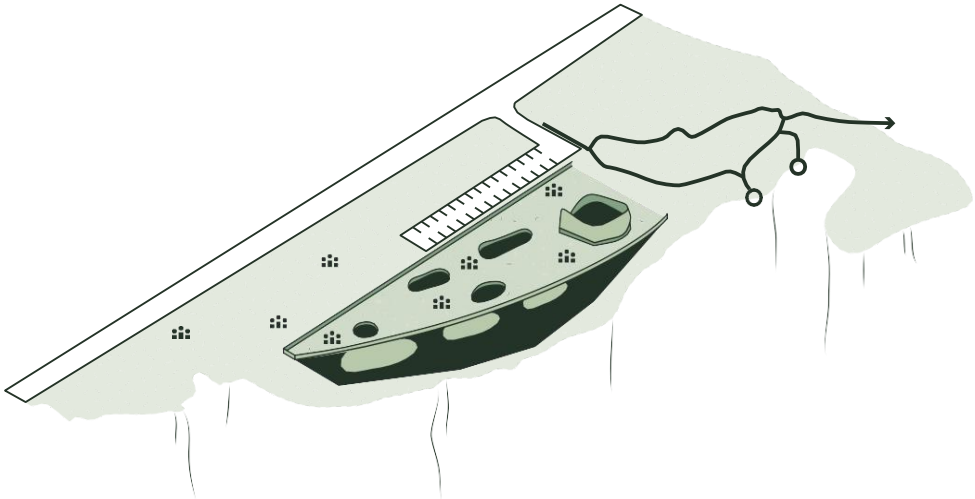

Figure 4: Infill space underneath

A string of activities is added to the cliff's edge to heighten the human experience of the valley. This is illustrated in Figure 5.

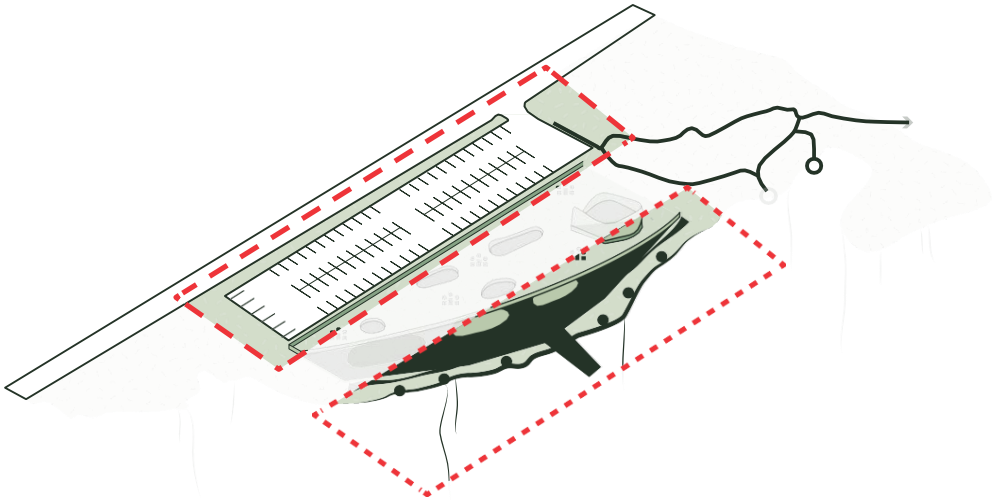

Figure 5: Activities is added to the human experience of the valley

The project's concept principles include:

- Protecting the sanctity of the site;
- Protect the ecology through a reduced human impact by dispersing the users across the site; and
- Heighten the human experience.

Numerous activities will be accommodated for; however, the following will be on the exterior of the main building which could potentially contribute to visual impacts. They include the following:

- Sky nests and Sky swings located on the ground floor in the landscape on the eastern section of the complex;
- The Skywalk which will extend over the canyon's edge and offer the user a 360° panoramic view;
- The Skybridgewhich will meander along the canyon's edge;
- Zorbing on the north western side of the complex, which involves giant transparent plastic balls floating on a large area of water;
- Rock climbing on the eastern section;
- The upgrade of existing pathways and lookout points through the forest points; and
- A roof garden which includes a kids play area, roof nets, an amphitheatre, picnic lawns, a sculpture garden and an event space.

Figure 6: Bird's eye view, artist impression of the view along the cliff's edge

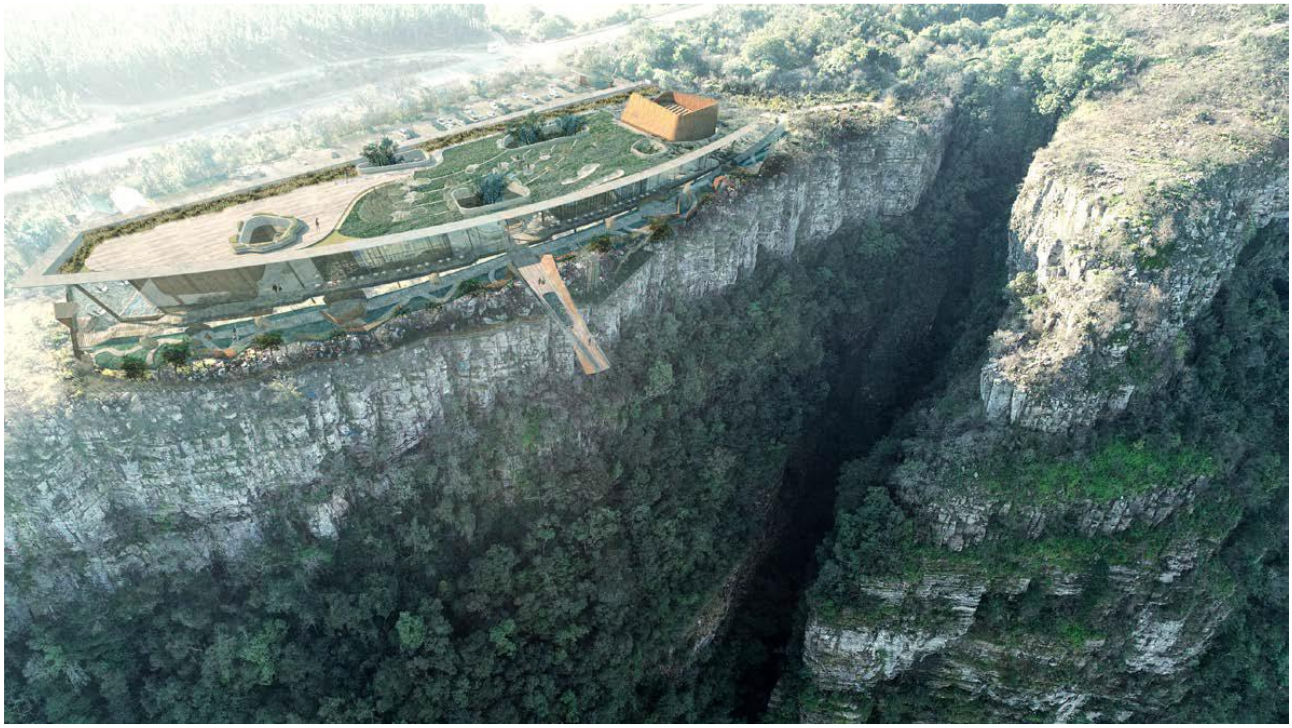

Figure 7: Artists impression of a bird's eye view

6 Description of the affected environment

This section of the report aims to analyse and describe the intrinsic value of the existing landscape, including aspects of the natural, cultural, and scenic landscape. The sections below describe the character, uniqueness, intactness, quality, rarity, and vulnerability.

6.1 Landscape baseline

Table 5: Summary of the landscape baseline

Landscape parameter	Description
Climate	The Study Area has a temperate highland tropical climate with dry winters and wet summers. The district's yearly temperature is 22.3°C, Graskop typically receives about 71.61 millimetres precipitation and has 119.92 rainy days with an average cloud cover of 56% throughout the year and visibility ranging between 8 – 10km. Heavy mist and fog is a common occurrence during the summer months which could affect overall visibility, however this was not considered during the rating of possible impacts. (*https://www.weather-atlas.com/en/south-africa/graskop-climate).*
Topography and hydrology	Study Area The topography within the wider region of the Study Area ranges from sheer cliffs dropping off at perpendicular angles (refer to Figure 12) to relatively flat plateau's (refer to Figure 13) valleys and rolling hills. Elevation ranges from 580m to over 1900m above sea level. The local topography can be described as undulating which will provide sufficient screening ability in some areas. There are three perennial rivers within the Study Area, namely, Waterval Spruit (approximately 5.2 km north of the site), Maritsane river (approximately 5.3 km north east of the site) and the Ngwaritsana river (approximately 3.9 km north of the site). Site The Site for the proposed development is located on the edge of the canyon escarpment and is fairly level (0-3%) right up to the escarpment edge where it drops at a perpendicular angle into a cliff of approximately 700m. Refer to Figure 8, which illustrates the sudden lost in altitude as a result of the escarpment. There are strong drainage lines visible on the edge of the escarpment. After rain events these drainage lines turn into a series of small waterfalls. During the site visit spontaneous small trickles of water, which run from the natural rock and pathways were visible.
Vegetation cover	Biome The Study Area is situated within two Biomes, namely Afrotemperate, Subtropical and Azonal Forests and the Grassland Biome.

Landscape parameter	Description
	<u>Vegetation types</u> Biomes can further be divided into smaller units known as vegetation types and according to Mucina and Rutherford (2006), three natural occurring vegetation types namely Northern Mistbelt Forest, Northern Escarpment Afromantane Forest and Northern Escarpment Quartzite Sourveld are located within the Study Area. • Northern Misbelt Forest This evergreen indigenous forest, mostly occurs in small, fragmented patches within moist east facing, sheltered kloofs and characterised by tall trees; • Northern Escarpment Afromontane Forest This vegetation is mainly found in kloofs recognised by a wide variety of tall indigenous trees and reaching a maximum height of up to 20m; and • Northern Escarpment Quartzite Sourveld This vegetation type mainly consists out of a complex of grassland and low density, scattered small trees and shrubs occurring on quartzite outcrops with average tree height between 5 -7m The forest vegetation types will provide sufficient screening ability for this type of infrastructure, whereas the grassland Northern Escarpment Quartzite Sourveld, which includes scattered small trees and shrubs (predominantly found on the plateau area west of the site), will not provide sufficient screening ability. Reference can be made to Figure 13 and Figure 14 illustrating the different natural vegetation types as mentioned above. The 2015 ecological study states that a diversity of vegetation communities was recorded within the relatively small Study Area and included *Passerine montana/Pteridium aquilinum* scrubveld, *Aloe arborescens/Clivia caulescens* on cliff edges, vertical cliffs and mistbelt forests. At least eight (8) plant species of conservation concern, *Monopsis kowynensis* (Vulnerable), Streptocarpus fenestra-dei (Rare), *Schizochilus lilacinus* (Extremely Rare), *Merwilla plumbea* (Declining), *Drimia alata* (Declining), *Clivia caulescens* (Near Threatened), *Alsophila capensis* (Declining) and *Rapanea melanophloeos* (Declining) were recorded during the field survey. In addition to this, one nationally protected tree, *Afrocarpus falcatus* (Small leaved Yellowood) and numerous provincially protected species were also recorded throughout the Study Area. <u>Timber plantations</u> Natural vegetation has made way for large scale monoculture tree plantations which will significantly screen views, especially for views from a general west and east direction (fern tree height ranged from approximately 15m – 30m). Reference can be made to Figure 10.
Landcover	With reference to Figure 9, the main landcover includes plantation forest, natural grassland and indigenous forest along the escarpments. Residential areas are associated with the formal towns of Graskop and Pelgrims Rest (located south and west of the site) as well as settlements from Bushbuckridge, London, Dwarsloop, Shatale and Casteel, all located more than 15km north east of the Site. As mentioned above, plantations (and indigenous forest to some degree)

Landscape parameter	Description
	will provide sufficient screening ability. Grassland vegetation will not provide any screening ability.
Land use	The site is zoned as "Provincial Park" and is a well-known tourist attraction along the popular Panorama Route (R534 scenic route). Current infrastructure on site includes dilapidated vendor stalls, ablution facilities, a carpark, a guard house, natural stone footpaths and litter bins. Refer to Figure 16 and Figure 17.
Landscape character (Refer to Appendix B1 for a detailed description of the landscape character)	*Landscape character is a distinct, recognisable, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse. Landscape character includes the natural and man-made attributes of the Study Area, including topography, land cover and vegetation. The overall landscape character is influenced negatively by incompatible activities, or positively by the presence of natural and/or man-made features, such as steep gradients, presence of rocky ridges, natural vegetation, pans, and floodplains.* <u>Study Area</u> The Study Area is perched on the edge of the Drakensberg escarpment, the landscape can be described as rugged and undulating with a rocky escarpment, characterised by steep cliffs, standing in contrast to higher laying flatter plateau areas and valley bottoms intersected with rivers, refer to Figure 15. The natural vegetation can be described as short, closed grassland rich in forb species with scattered trees and shrubs amongst rocky outcrops. Logging have become the area's number one economic driver and large formal patches of timber plantations and associated machinery and infrastructure (such as saw mills) are visible throughout the Study Area, refer to Figure 20. The R534, turns off the R532 and is a panoramic, meandering, tarred loop road connecting various scenic attractions. Various dirt access roads (specifically for logging purposes) turn off from the main tarred roads in the area. The greater area is further commonly known for its number of scenic tourist attractions such as Bourke's Luck Potholes (outside the Study Area), Three Rondawels (outside the Study Area), Pinnacle Rock (refer to Figure 11) as well as spectacular waterfalls such as Lisbon Falls (refer to Figure 18), Berlyn Falls (refer to Figure 19) and Mac Mac Falls. The town of Graskop with its old charm character is located south west of the God's Window site. The town has various tourist accommodation curio shops, pubs coffee shops and eateries which brings this small town to life. <u>Site</u> The site comprises of dense, low- to medium growing shrubby vegetation covered with lichens and moss to create a forest-like atmosphere. In some sections the vegetation is so dense (around and above the footpaths) that a "green tunnel effect" is experienced when moving through the space. These vegetation tunnels open up at designated viewpoints which allows for breath-taking views. At the edge of the escarpment sheer rock face plummets down into a green mass of Mistbelt Forest and pine plantations below.

Landscape parameter	Description
Visual absorption capacity (VAC) and visual intrusion (Refer to Appendix B2 and B3 for a detailed description of the VAC and visual intrusion)	*VAC is an indication of the ability of the landscape to visually conceal the proposed development. Areas with high VAC can accommodate and absorb physical changes in the landscape without transforming its visual character and quality, while a low VAC rating implies a low ability to absorb or conceal visual impacts (Oberholzer, B.2005). The factors that contribute to the VAC factor includes topographical diversity, vegetation, soil contrast, visual pattern, and recovery time.* *VAC is further closely related to visual intrusion, which refers to the physical characteristics and nature of the contrast created by a project on the visual aspects of the receiving environment. It is also, as with VAC, a measure of the compatibility or the conflict of a project with the existing landscape and surrounding land use.* The VAC can generally be described as moderate – high (this will depend on the location of the visual receptor) which implicates that the proposed development will be concealed to a large extent but will still be fully visible from a number of observation points (especially located from a distance of more than 5km). There is currently no similar infrastructure present in the area (except for the Graskop Gorge Lift, however it does not include a structure protruding over the canyon). Based on the current design's available information, the proposed building's shape, texture and colour have moderate visual intrusion. This is partially as a result of the concept of "cutting into the landscape" and the proposed roof garden which will further mitigate visual intrusion during the operational phase of the project. Reference can be made to Section 5.2 which graphically illustrates these concepts.
Landscape quality (Refer to Appendix B4 for a detailed description of the landscape quality)	*Landscape quality is based on human perceptions and expectations in the context of the existing environment. A landscape's visual quality is therefore a factor of an observer's emotional response to physical landscape characteristics and therefore assigning values to visual resources is therefore a subjective process.* *Landscape quality increases with the presence of water, topographic ruggedness and where diverse patterns of vegetation occur. Areas that contain more natural features or harmonious man-made compositions will have a more favourable landscape quality than areas with non-harmonious human activity.* The landscape quality of the Site and larger Study Area is considered high due to the striking visual impression it leaves on the viewer (hence this being a famous viewpoint along a scenic route). The intactness would also have been very high if it wasn't for some level of visual encroachment on the natural landscape which includes (to some extent) the timber plantations and associated man-made elements. Existing infrastructure on site include the carpark, stone-paved footpaths as well as paved and unpaved roads, buildings and overhead transmission lines in the proximity of the existing God's Window site.
Landscape value (Refer to Appendix B5	*Landscape value is concerned with the relative value attached to a specific landscape by society, bearing in mind that a landscape may be valued by different stakeholders for a whole variety of reasons. Value can apply to areas of landscape as a whole or to the individual elements, features and aesthetic or*

Landscape parameter	Description
for a detailed description of the landscape value)	*perceptual dimensions which contribute to the character of the landscape.* (IEMA, 2013) The Study Area is likely to be most valued by tourists who visit the town of Graskop, and the various scenic tourist attractions as discussed earlier (including the God's Window site itself). Recreational users involved in outdoor recreational activities such as hiking, and mountain biking will most likely attach moderate – high value to the landscape. They utilise the landscape for enjoyment purposes and are aware of the qualities of the landscape which often include the visual quality that is associated with the landscape. The Study Area is likely to be moderately valued by residents permanently residing in the Study Area (which do not have a direct connection with the timber industry) and workers who have vested interest in the tourism industry. The proposed project may therefore lower the landscape value for the above groups of receptors by: • The potential visual intrusion and presence of a building and cantilevered structure of such monumental scale; and • The direct loss of vegetation (especially during the construction phase of the project). Contractors or permanent employees related to the forestry industry will have a different perception because of their more regular contact with the adjacent landscape and the ongoing timber industry related type changes within it. The proposed project will not affect the landscape value for these receptors.
Lights at night (Refer to Appendix B6 for a detailed description of night time lighting)	To determine the potential visual impact of night time lighting, it is important to understand the existing lighting levels within the Study Area. The Institute for Lighting Professionals (ILP) 2011 identifies five zones for exterior lighting control, describing the existing lighting conditions within the landscape. These zones are supported by design guidelines to reduce lighting pollution, which can inform mitigation measures. The Study Area can be classified as rural with low district brightness and due to its location (right on the edge of an escarpment) the Skywalk Project would almost act as a light beacon and would be visible for many kilometres towards the west when lit at night. This would be experienced by motorists traveling along the R533, residents on the outskirts of Graskop as well as by forestry workers in the in the lower lying eastern areas below the proposed development. The sheer viewing distance will however reduce the intensity of the impact.
[1]**Sense of place**	<u>Study Area</u> The sense of place associated with the Study Area can be described as scenic, rural, and peaceful with low – moderate levels of activity. The Study Area is somewhat commercialised as a result of the large-scale timber forest plantations.

[1] Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. It is created by the land use, character, and quality of a landscape, as well as by the tangible and intangible value assigned thereto.

Landscape parameter	Description
	Natural forest vegetation, the R532, the R534, patches of pine forest, sheer rocky cliffs (associated with the high canyon), scenic vistas, meandering rivers, and waterfalls dominates the visual scene. Scattered tourism accommodation on the outskirts of Graskop and small settlements such as Driekop further enhances the overall rural sense of place. <u>Site</u> Observers develop a sense of place through knowledge and experience of a particular area. The uniqueness of the landscape, simplicity, and visual character of God's Window is already widely known on a national, and to some extent, on an international level. The site has a strong sense of place, deeply rooted to the natural scenic environment, with low key infrastructure at the viewpoints, allowing the observer to focus on the landscape's natural beauty.

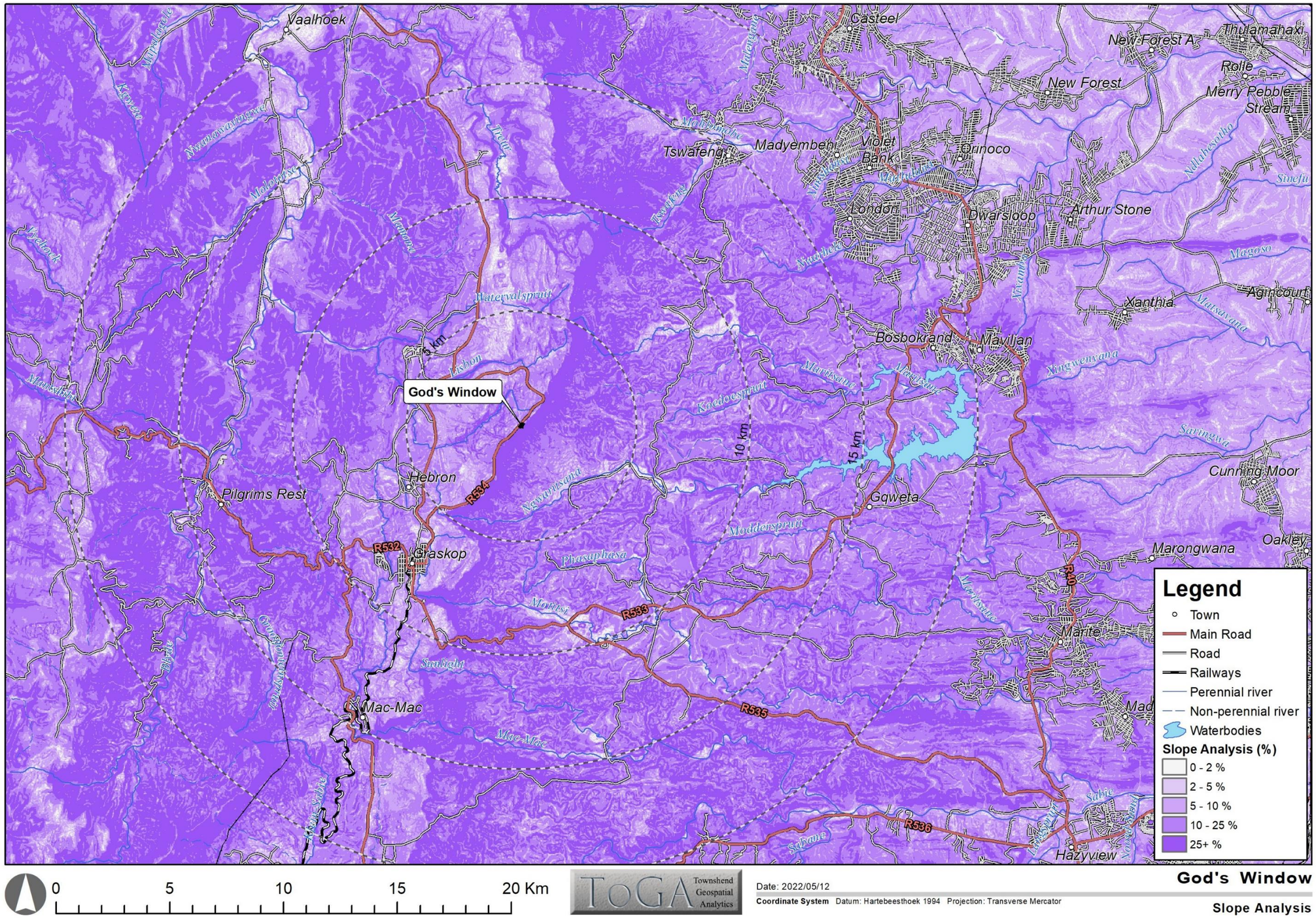

Figure 8: Slope analysis

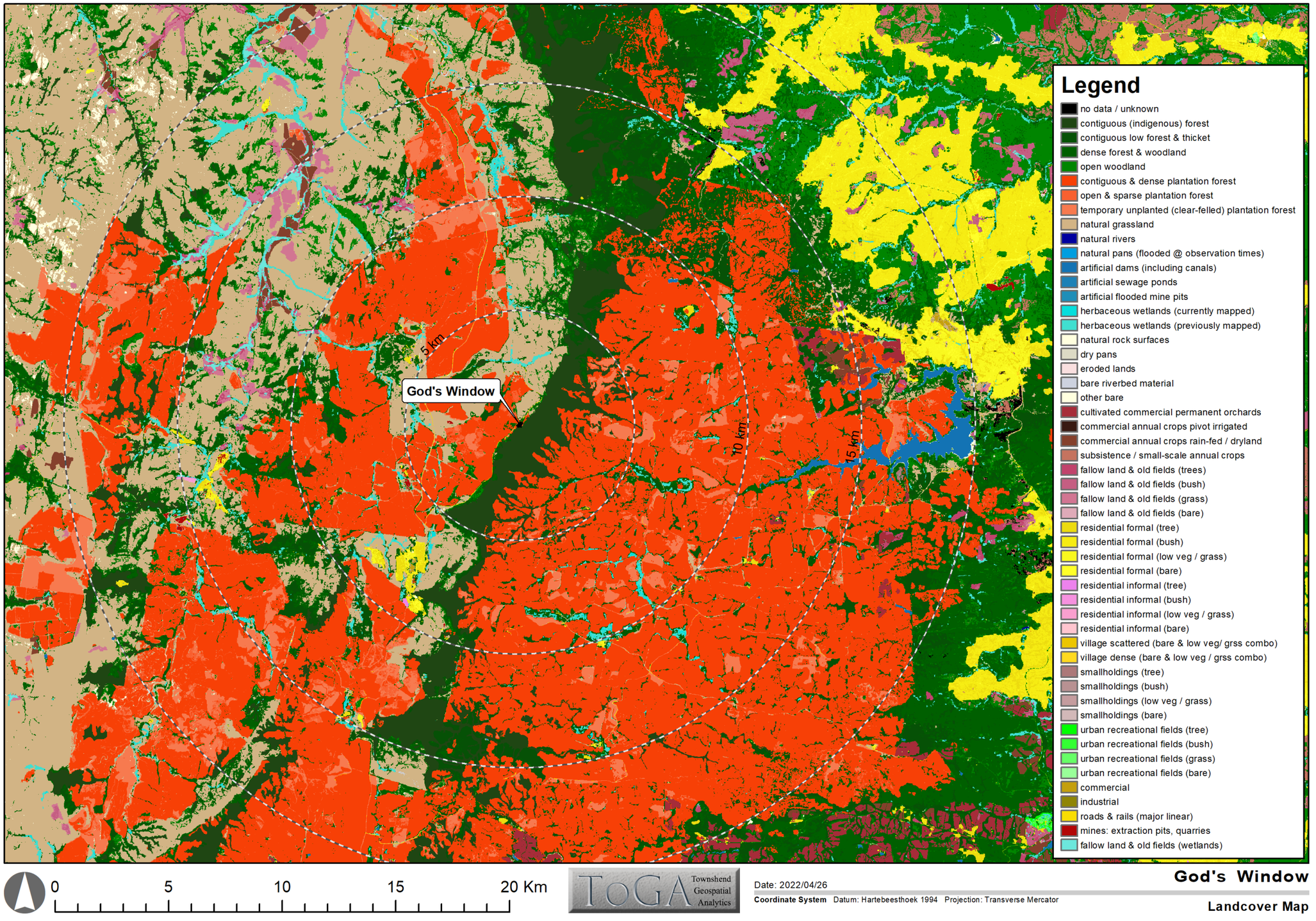

Figure 9: Landcover

Figure 10: Forestry activities along a gravel road, off the R533 (east of God's Window)

Figure 11: Pinnacle Rock entrance (south of God's Window)

Figure 12: Typical sheer cliffs and valleys associated with the topography

Figure 13: Plateau with natural grassland and plantations in the background

Figure 14: Typical rocky outcrops with shrubs and small trees along the R534

Figure 15: Typical landscape character

Figure 16: Existing guard house and market stalls at God's Window

Figure 17: Existing natural stone footpaths

Figure 18: Lisbon Falls entrance

Figure 19: London Falls entrance

Figure 20: Driekop York Timbers sawmill along the R532

6.2 Visual baseline

6.2.1 Main visual receptors

During the site visit potential visual receptors and their sensitivity were identified and indicated in Table 6 below. Their sensitivity will be dependent on the location, the activity of the viewer and the importance of the view. Receptor locations are not only stationary but can also be roads along which people travel. Reference can be made to Appendix B7 which provide further detail on receptor sensitivity.

Table 6: Visual receptor sensitivity

Receptor	Sensitivity
Tourists visiting the God's Window viewpoint and other scenic points within the Study Area	High sensitivity (the sole purpose of them visiting this attraction is to experience the spectacular views that it is being promoted for). Tourists visiting the site will be directly exposed to the construction and operational activities of the proposed project and will therefore experience it more intensely.
Permanent residents on the outskirts of Graskop	Moderate - High sensitivity (Even though the viewing distance will be over 5km (and the intensity might be low) residents will have a sustained visual exposure to the proposed development).
Recreational users utilising the plantation roads and hiking/mountain biking routes in the area.	Moderate sensitivity (Recreational users utilise the landscape for enjoyment purposes and are aware of the qualities of the landscape which often include the visual quality that is associated with the landscape; however, they will be focused on their immediate environment and on the task at hand and not necessarily on the scenic value of the landscape).
Motorists traveling along the R532 (main road from Graskop, connecting smaller settlements to the north), the R533 (between Graskop and Bushbuckridge), the R535 (between Graskop and Hazyview) as well as along the R534 which runs past the site. These provincial roads form part of the scenic Panorama Route.	[2]High - low sensitivity (Momentary view and experience of the proposed development as their attention is focused on the road, most views will be screened by dense timber plantations and therefore lowering the intensity).
Forestry workers working at the foot of the escarpment	Low sensitivity

[2] Receptor sensitivity will vary between high (tourists traveling along the panoramic routes) to low (workers/contractors traveling to and from forestry plantations).

6.2.2 Visual exposure and visibility

Visual exposure and visibility are further explained in Appendix B8. In order to accurately illustrate the visibility and visual exposure of individual infrastructure the viewshed analyses were spilt into the following sections:

- The main building;
- The Skywalk; and
- The Skybridge

The shaded areas (red, orange and yellow) illustrate the areas and the degree of visibility where the proposed infrastructure may be visible. The unshaded areas illustrate areas where there will be no visibility.

Main building

According to the viewshed analysis (purely based on topography) the main building will be highly visible on some sections along the R534 and along some areas east of the site, all within a 5km radius. During the site visit it was noted that, while driving along the R534 (from south to north) visibility will appear and disappear momentarily which offers road travellers an element of surprise.

Moderate visibility is expected for some sections towards the east, within a distance of between 5 -10km. Scattered higher laying sections towards the west will also experience moderate visibility.

Marginal visibility in isolated locations is expected beyond 10km, however it is most likely that views from these areas will be mostly obscured by other infrastructure and vegetation (tree plantations). The viewshed indicates that the main building will not be visible from the town of Graskop. Reference can be made to Figure 21.

Skybridge

The Skybridge's visibility will mostly be restricted to the east, with high visibility expected within a 5km radius and moderate visibility expected between 5 -10km. Due to the nature of the structure (glass and Corten steel) which are set amongst dense indigenous planting it is expected that observer's will struggle to distinguish it in the landscape for distances past 5km. Reference can be made to Figure 22.

Skywalk

Visibility will be high and mostly focused on areas east of the site, the structure will also be highly visible along sections of the R534 (within a 3km range from the site) as the observer approach the site from the south. Moderate visibility is expected within a distance of between 5 -10km and marginal visibility is expected beyond that. The viewshed indicates that the Skywalk will not be visible from the town of Graskop. Reference can be made to Figure 23.

With reference to Figure 21 - Figure 23, the highly visible section to the east (an almost uniform area shaded in red on all the viewsheds) does not include any permanent residences and is in general not accessible to the public due to road access restrictions. These areas are typically utilised by forestry workers and views will be severely restricted due to the area mostly consisting out of high and dense pine tree plantations.

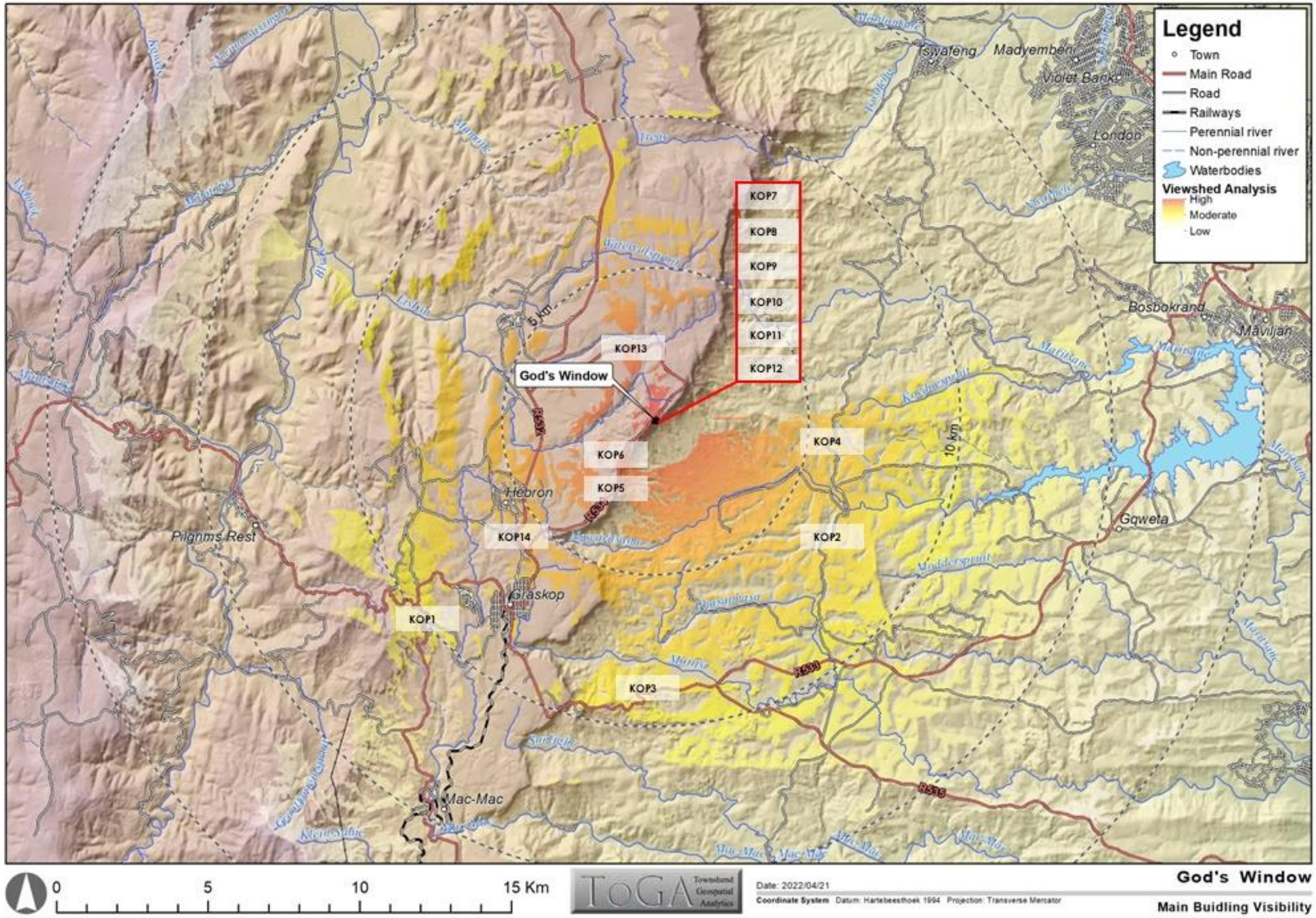

Figure 21: Viewshed analysis_Main building

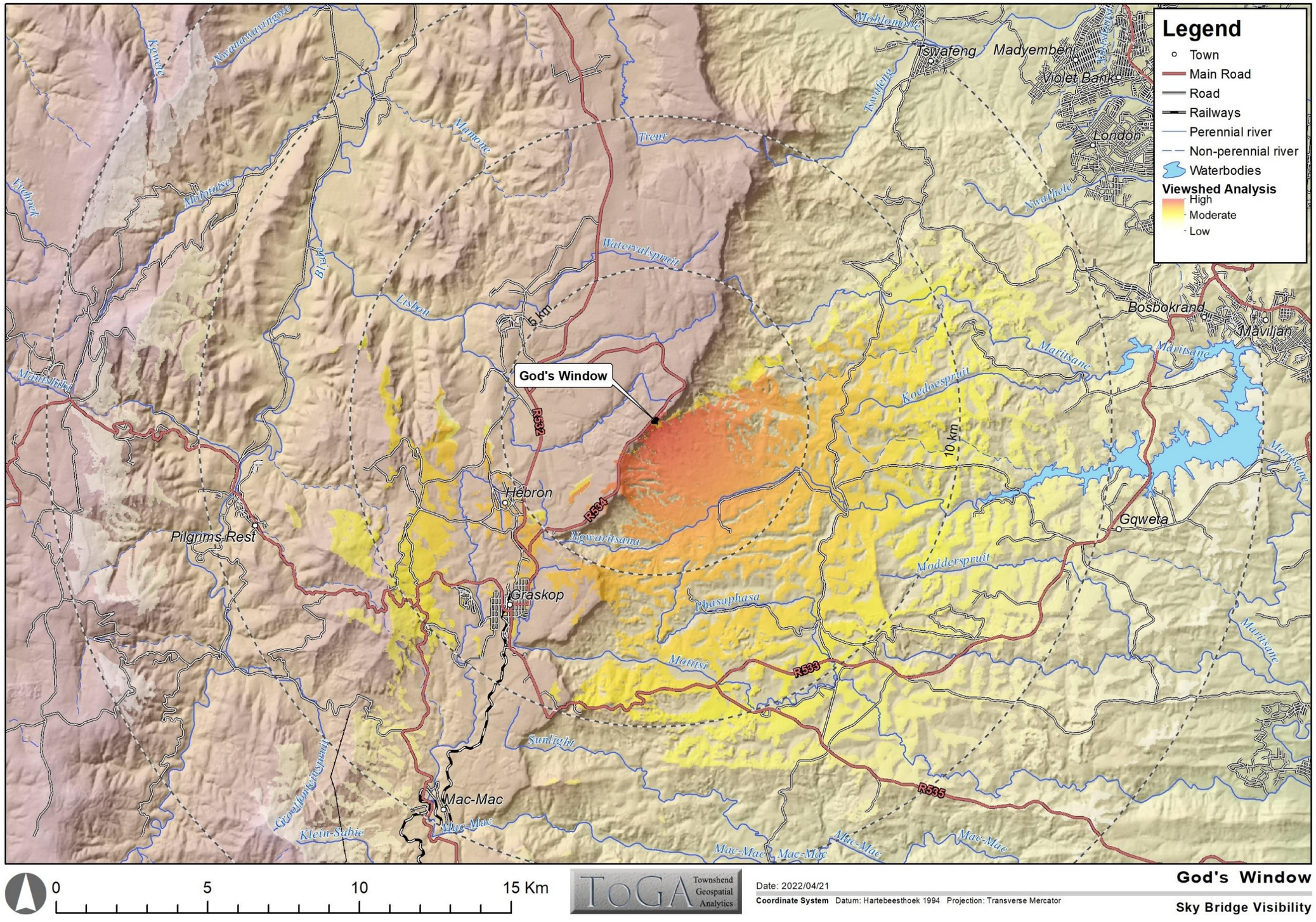

Figure 22: Viewshed analysis_Skybridge

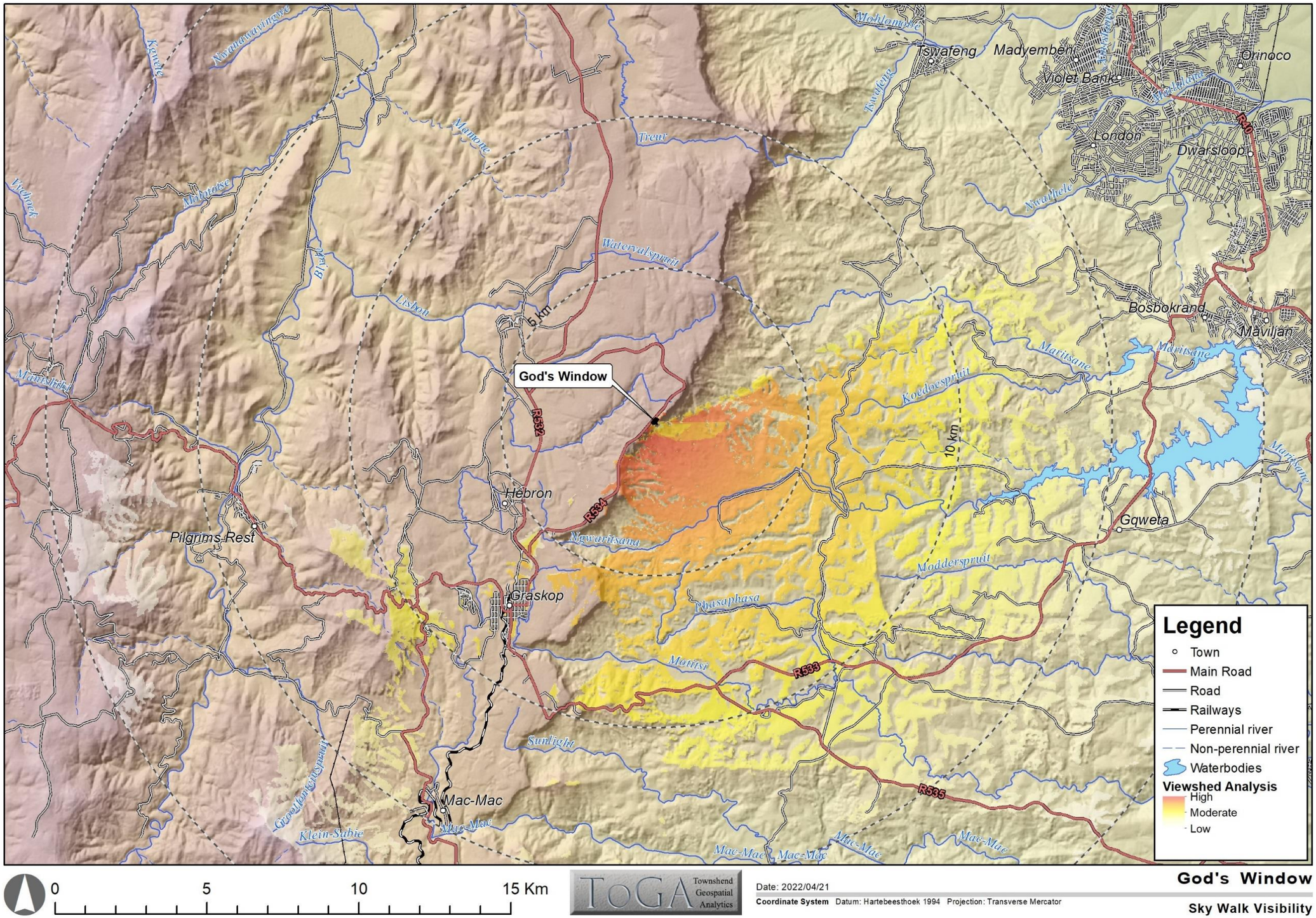

Figure 23: Viewshed analysis_Skywalkl

6.2.3 Key observation points

Reference can be made to Figure 21 for an indication of the locality in relation to the site.

KOP	GPS location	Visibility (Appendix B8)	Receptor sensitivity	Nature of the view	Transient or stationary	Comment
1 (Figure 24)	24°57'9.49"S 30°48'48.80"E (Along the R532 towards Graskop) 11,5km south west of the project site	Moderate-marginal visibility	Moderate - Low	Full	Transient	Due to the topography receptors will be able to have a view over the tree plantations (located in the middle ground) towards the proposed infrastructure. It will be difficult to distinguish detail from this point, but the Skywalk could potentially be recognisable as a linear element perched above the horizon.
2 (Figure 25)	24°54'26.07"S 30°56'46.88"E (Along a timber plantation gravel access road, off the R533) 7km east of the project site	Moderate	Low	Full	Transient and stationary	During the time of the site visit the timber plantation trees were recently planted and the observer currently have views over it. As the trees mature, views from this specific location will be visually obscured.
3 (Figure 26)	24°57'29.08"S 30°53'1.42"E	Moderate – marginal visibility	Moderate - Low	Full	Transient	The photo was taken in the afternoon

KOP	GPS location	Visibility (Appendix B8)	Receptor sensitivity	Nature of the view	Transient or stationary	Comment
	(Along the R533) 9km south of the project site					with some cloud cover, haziness, and shadows. Views will most likely be clearer in the morning on an open cast day.
4 (Figure 27)	24°52'32.11"S 30°56'48.92"E (Along a timber plantation gravel access road, off the R533) 6,5 km east of the project site	Moderate	Low	Full	Transient and stationary	The timber plantations were recently cleared in this area and as a result the observer will have a unobstructed view towards the Site.
5 (Figure 28)	24°53'53.65"S 30°52'29.24"E (Along the R534) 2,7km south west of the site	High	Moderate - Low	Partial (main building) Full (Skywalk)	Transient	This is one of the first sections along the R534 where the Skywalk will become visible.
6 (Figure 29)	24°53'22.96"S 30°52'32.78"E (Along the R534) 1,8 km south west of the site	High	Moderate-Low	Partial (main building) Full (Skywalk)	Transient	The view towards the site opens up spectacularly just before the road bend. The vegetation at this point is of such height that motorists will have a clear view towards the site.
7 (Figure 30)	24°52'33.66"S 30°53'15.54"E (Along the R534)	High	Moderate – High	Partial (main building)	Transient and stationary	The existing vegetation obstruct views from this point.

KOP	GPS location	Visibility (Appendix B8)	Receptor sensitivity	Nature of the view	Transient or stationary	Comment
	At the existing site's main entrance					
8 (Figure 31 and Figure 32)	24°52'36.34"S 30°53'18.88"E View from existing platform 1 100m east of the proposed Skywalk	High	High	Partial	Stationary	The existing vegetation and cliff formation obstruct views towards the west (overlooking the proposed Skywalk). This point however provides the observer with a moderately open view towards the east and south.
9 (Figure 33)	24°52'35.81"S 30°53'19.67"E View from existing platform 2. 150m east of the proposed Skywalk	High	High	Full (Skywalk)	Stationary	From this viewing platform the Skywalk and Skybridge will be much more visible than platform 1. The observer will be able to view the protruding structure set against the escarpment background
10 (Figure 34)	24°52'34.86"S 30°53'20.55"E View from existing platform 3. 200m east of the proposed Skywalk	High	High	Full (Skywalk)	Stationary	This observation point provides the same viewing experience towards the Skywalk as indicated in KOP 9 above, however the observer will be slightly further away.

KOP	GPS location	Visibility (Appendix B8)	Receptor sensitivity	Nature of the view	Transient or stationary	Comment
11 **(Figure 35)**	24°52'34.04"S 30°53'25.13"E View from existing platform 4. 300m east of the proposed Skywalk	High	High	Partial - marginal	Stationary	Due to the existing vegetation and the rocky curves at the edge of the escarpment, the Skywalk structure will be almost fully obscured from this point. (It is likely that the last section could be visible from here).
12 **(Figure 36)**	24°52'28.51"S 30°53'29.32"E View from existing platform 5 500m east of the proposed Skywalk	High	High	None	Stationary	As a result of the natural topography none of the newly proposed infrastructure will be visible from this point. This is the only existing platform which will have an unspoilt view.
13 **(Figure 37)**	24°51'22.67"S 30°52'47.10"E View from a topographical higher laying area on the R534. 2,4km north west of the site	High	Moderate – low	Marginal	Transient	The topographical higher laying area and lower grassland vegetation allows for views towards the upper section (Corten steel element and roof garden) of the proposed main building.
14	24°54'44.09"S 30°50'31.19"E	Moderate	Moderate – low	Partial - marginal	Transient	At this specific section there

KOP	GPS location	Visibility (Appendix B8)	Receptor sensitivity	Nature of the view	Transient or stationary	Comment
(Figure 38)	View from the R532. 6km south west of the site.					is a visually unobtrusive strip of land between two plantation sections which frames the view towards the God's Window site. Sections of the proposed infrastructure could be visible from this point.

Figure 24: KOP 1

Figure 25: KOP 2

Figure 26: KOP 3

Figure 27: KOP 4

Figure 28: KOP 5

Figure 29: KOP 6

Figure 30: KOP 7

Figure 31: KOP 8_south eastern view

Figure 32: KOP 8_north eastern view

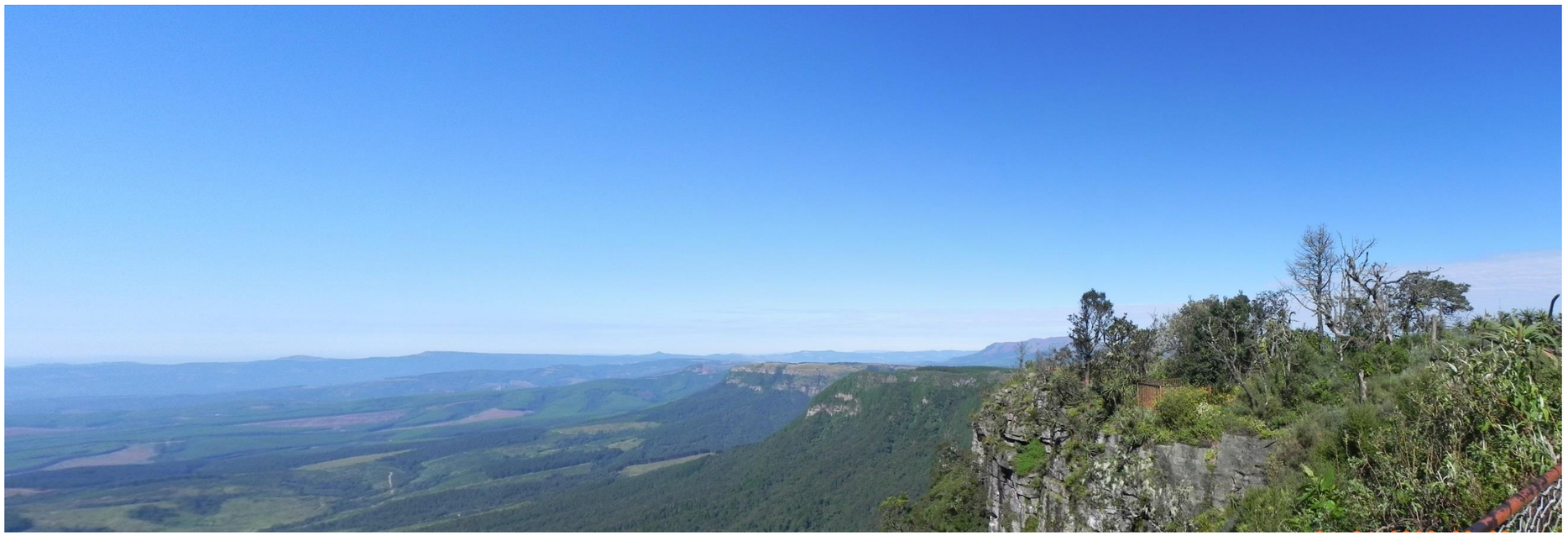

Figure 33: KOP 9

Figure 34: KOP 10

Figure 35: KOP 11

Figure 36: KOP 12

Figure 37: KOP 13

Figure 38: KOP 14

7 Impact assessment

Potential landscape and visual impacts associated with the proposed infrastructure on the Study Area are discussed in the sections below according to the method outlined in Appendix A. Reference can be made to Appendix C which include the detailed impact rating tables. This section also presents an assessment of the significance of the impacts prior to mitigation and after mitigation (when visual inputs and mitigation measures are put in place and taken into consideration), depending on whether mitigation measures are feasible and possible and assuming they are fully implemented.

7.1 Associated activities which can potentially lead to landscape and visual impacts

Based on the type of infrastructure components and the nature of the receiving environment (obtained during the desktop study and confirmed during the site visit) the main landscape and visual issues and activities are as follows:

7.1.1 Construction phase

- The removal of existing visually derelict infrastructure;
- Visually intrusive construction activities such as the clearing of vegetation, earthworks (creation of platforms, cut and fill), building works, waste generation, transportation of waste and materials and temporary site offices; and
- The presence of construction activities, including construction camps, material lay down areas, stockpiles cranes, scaffolding, delivery vehicles and general construction operations.

7.1.2 Operational phase

- The visual presence of the Skywalk, Skybridge and main building (especially in areas east of the site);
- Visibility and visual exposure of proposed infrastructure from scenic roads, especially the change in view when driving along the R534;
- Overall enhancement of the viewer's viewing experience over the canyon through the introduction of the Skywalk and Skybridge;
- Further degradation of the rural character and sense of place through the introduction of large-scale infrastructure (compared to the existing structures on site);
- Increased levels of nigh time lighting within the Study Area;
- The introduction of additional infrastructure on the edge of the escarpment (the Graskop Gorge Lift and the Panorama chalets are located south of the town of Graskop, along the R533, approximately 9km from the God's Window site); and

7.2 Direct impact assessment

The following landscape and visual impacts were assessed:

- Impact on the landscape character and sense of place
- Impact on visual intrusion and VAC
- Impact on views and visual exposure
- Impact due to night time lighting

7.2.1 Landscape impacts

Landscape impacts as a result of the proposed development relate to physical changes to the landscape which includes changes to the landscape character and to the landscape as a resource. Visual intrusion and VAC relate to the level of compatibility and the ability of the landscape to visually absorb the proposed infrastructure, including contrasts in form, line, colour and texture, mainly resulting from vegetation clearing, earthworks and the addition of new structures.

Landscape impacts during the construction and operation phases of the proposed development will include local changes to existing landscape views due to the introduction of larger scale infrastructure. During the construction stage, additional impacts such as construction camps and the increase in construction vehicle activity will create further impacts in addition to the main infrastructure components. Landscape scarring from exposed cut slopes spoil sites and possible soil erosion around cleared areas during the construction phase of the project may also contribute to landscape impacts in localised areas. The sections below present the results of the landscape impacts.

Impact 1: Impact on Landscape Character and Sense of Place

Description: Change in the landscape character and sense of place by constructing and operating a building and associated infrastructure which will protrude over the cliff edge, and which will be larger in scale than existing infrastructure on site.

Impact significance

Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or receptor. It is generated by varying combinations of a range of factors including; land use, character, and quality of a landscape, as well as by the tangible and intangible value assigned thereto. As such, sense of place is a subjective matter that differs from person to person based on individual backgrounds, experiences, norms, values, and aspirations. While many factors influencing the sense of place are tangible (e.g., increased development, more people, noise, dust), the sense of place can also be significantly altered as a result of a change in intangible factors (e.g., socio-cultural norms and values). With an influx of people from outside the area, as well as work experience and increased disposable income, the local people will be exposed to differing world views, cultures, attitudes, norms, and values.

The existing infrastructure on site does not visually contribute positively to the site's sense of place and the natural landscape character of the Study Area has already been permanently altered through the presence of large-scale timber plantations.

These changes to the landscape character and sense of place during the operational phase of the project will have both positive and negative impacts within the landscape setting. The intensity of positive impacts may be increased through the implementation of visual enhancement measures which are discussed under section 9.2.

The significance of the impacts on the landscape character and sense of place will be negative (moderate) during the construction phase of the project. During the operational phase of the project, the significance of the impacts on the landscape character and sense of place will be both negative (moderate) (it will take away some of the rural character and sense of place within the Study Area) and positive (moderate) (proposed project will replace the run-down old structures on site).

The impact as a result of negative change in landscape character and sense of place cannot be mitigated, the only option is a no project alternative.

CONSTRUCTION/DECOMMISIONING PHASE	
Significance without mitigation	**Significance with mitigation**
Moderate – negative	Moderate – negative

OPERATIONAL PHASE	
Significance without mitigation	**Significance with mitigation**
Moderate– positive	Moderate – positive

OPERATIONAL PHASE	
Significance without mitigation	**Significance with mitigation**
Moderate – negative	Moderate – negative

Impact 2: Impact on visual intrusion and VAC

Description: The level of compatibility and the ability of the landscape to visually absorb the proposed infrastructure, including contrasts in form, line, colour, and texture resulting from vegetation clearing.

Impact significance

Visual intrusion will be slightly lower (moderate - minor) during the construction phase and moderate during the operational phase.

Views of ground clearance, the construction camp, material lay-down yards, stockpiles, cranes, scaffolding, delivery vehicles, dust and general construction will create a visual contrast with the landscape character and cause a negative visual impact (especially for tourists visiting the viewing platforms).

During the operational phase of the project mitigation measures and visual inputs will lower the intensity of the impact, but not the overall significance. The Skywalk will be the most visually obtrusive built element as the long and linear feature will extend over the ridge line creating a strong contrast when set against the horizon and organic lines of the natural landscape. Due to the natural topographic variations as well as the existing vegetation (which makes the proposed project less noticeable in the landscape), the main building will be visually less obtrusive than first anticipated (especially for tourists traveling along the R534). The successful maintenance of vegetation buffers (existing vegetation along the R534) can reduce the intensity this impact on the landscape.

CONSTRUCTION/DECOMMISIONING PHASE	
Significance without mitigation	**Significance with mitigation**
Moderate – negative	Minor – negative

OPERATIONAL PHASE	
Significance without mitigation	**Significance with mitigation**
Moderate – negative	Moderate – negative

7.2.2 Visual impacts

Visual impacts relate to the recording of existing views and the determination of potential impacts as perceived by those living, working, and visiting the area. Infrastructure within visually significant locations will detract from the existing cultural landscape and interfere with the viewsheds of receptors, including road users of main roads such as the R534 and R532, and to a lesser extent motorists traveling on the R535 and R533. Night time lighting during the construction period will mostly be associated with temporary construction camps and vehicles. Permanent lights during the operational phase will mostly be associated with security lighting and signage.

Impact 3: Impact as a result of visual exposure and visibility

Description: The visual exposure, visibility and change in view from main roads and other stationary KOPs.

CONSTRUCTION/DECOMMISIONING PHASE	
Significance without mitigation	**Significance with mitigation**
Moderate – negative	Moderate – negative

OPERATIONAL PHASE	
Significance without mitigation	**Significance with mitigation**
Moderate – negative	Moderate – negative

Impact significance

During the construction phase visibility and visual exposure will be moderate, with higher visibility and visual exposure from areas towards the east and along scenic roads such as the R534 in areas where views open up towards the site and the change in view will be more noticeable. Receptors (motorists traveling along the R535, R533 and R532 provincial roads as well as forestry workers in the plantations below, receptors on the outskirts of Graskop and recreational users of hiking and cycling paths) may experience glimpses of higher construction elements such as cranes, and scaffolding.

Visibility and visual exposure during the operational phase will be highest just after construction, when newly planted trees and rehabilitated vegetation have not yet matured. This impact will be intensely experienced (and could potentially even be more significant) especially for receptors located at existing viewing platform 2 and 3. This is mainly as a result of their close proximity and the views opening up over the canyon at these specific points. The Skywalk at these specific points will visually interfere with current unspoilt, continuous open views (especially those towards the south), which, will be foreshortened through the introduction of the visually prominent Skywalk. The total project (including all its project components) will not be visible all at once from any of the KOPs located within 5 km from the site.

The visual impacts due to visibility and visual exposures will decrease to some extent if mitigation measures and visual inputs are implemented, and through the utilisation of existing site opportunities (such as screening from established vegetation along the existing entrance). These concepts must be further explored and developed during the detail design and planning phase of the project.

Impact 4: Impact due to night time lighting

Description: The visibility of lighting associated with the project during the construction and operational phase.

The introduction of formal infrastructure will contribute to sky glow and night time lighting in the Study Area (especially if viewed from areas east of the site) where the main building will appear as a prominent feature against the mountainous terrain.

During the construction phase, the impact significance due to night time lighting will be greatly reduced if construction activities are limited to daylight hours and the residual impact which will remain, will mainly include temporary security lighting at construction camps.

Even though there are little night time lighting associated with the site itself (as well as with the Study Area) the significance, as a result of the permanent lights will be moderate as the viewing distance for receptors will be between 2 -10km. The impact intensity of exterior lighting can be somewhat reduced through the implementation of mitigation measures as set out under section 8, however impact significance will remain unchanged. Due to the nature of the building (which mostly consist out of steel and glass) the screening of interior lighting will not be easily achieved.

CONSTRUCTION/DECOMMISIONING PHASE	
Significance without mitigation	**Significance with mitigation**
Moderate – negative	Minor – negative

OPERATIONAL PHASE	
Significance without mitigation	**Significance with mitigation**
Moderate – negative	Moderate – negative

7.3 Cumulative impacts

The proposed development could become a catalyst for more formal development (filling of an area with similar types of development) within the Study Area and specifically along the panoramic route (R534) which will result in further changes to the natural landscape character with increased visual intrusion, lights at night and greater visibility.

7.4 Indirect impact

The proposed Skywalk project could potentially set a president of developing an area located in a visually sensitive setting of international significance (i.e., on the escarpment of the world's largest green canyon).

8 Mitigation measures

The mitigation measures included under Section 8.2, and 8.3 are typical during the planning, construction, and operational phase of the project.

8.1 Planning and design phase

- Install low level lighting or limit mounting heights of lighting fixtures by utilising footlight or bollard level lights. The use of high light masts and high pole top security lighting should be avoided along the security fence of infrastructure areas. Any high-level masts should be covered to reduce glow and light spillage;
- Use minimum lumen or wattage in light fixtures, where possible and practical;
- Up lighting of structures must be avoided where possible, with lighting installed downward angles that provide precisely directed illumination beyond the immediate surroundings of the infrastructure, thereby minimising the light spill and trespass;
- All structures must have "full cut off" light fixtures that direct light only below the horizontal;
- Use low pressure sodium lamps, yellow Light Emitting Diode (LED) lighting, or equivalent to reduce sky glow. (Bluish white lighting is more likely to cause glare); and
- Make use of motion detectors on security lighting at operations and/or maintenance type buildings.

8.2 Construction phase

- Locate the construction camps in areas that are already disturbed or where it is not necessary to remove established vegetation;
- Utilise the existing screening capacity of the site and improve it by enclosing the construction site and stockyards with a dark green or khaki brown shade cloth which are at least 3m high, as an additional screen;
- Exposed soil (carpark area) must be covered or 'camouflaged' using a biodegradable soil mat and vegetation cover to reduce the duration of visible scarring of the landscape;
- Retain the existing vegetation cover of the site through selective clearing, where practical;
- Dust suppression techniques should be implemented especially on windy days, preferably using biodegradable binding agent;
- Remove rubble and other construction rubbish off site as soon as possible or place it in containers in order to keep the construction site free from additional unsightly elements;
- Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance; and
- Monitor all areas for rehabilitation failure and implement remedial action immediately.

8.3 Operational phase

- Buildings should not be allowed to fall in disrepair, damage to structures and maintenance to infrastructure should be carried out timeously and regularly as required.

9 Visual inputs

The visual inputs are mainly focused on the exterior design of the concept models as presented by *Boogertman and Partners (2019).* From a landscape and visual perspective certain essential objectives (listed under Section 9.1) must be achieved in order to lower the visual contrast and visual intrusion and for the building to stand in visual harmony with its setting.

9.1 Objectives

The proposed complex must:

- Use indigenous vegetation (where possible use similar to what is found in the immediate area around the site) not just to form an integral part of the development but also to create spaces for wildlife habitat;
- Be a landscape led and terrain inspired building rather than an iconic building which stands in contrast to its context (this is mainly achieved through shapes, colours, texture and materials);
- Express the character of the landscape in the building;
- Make use of visual softening techniques on the building façades;
- Use the proposed courtyards as an integration of the landscape and the building;
- Keeping to natural materials and minimizing the use of colours and signage on the hiking routes; and
- Use sound design strategies to preserve the visual character of the landscape such as the use of colour and camouflage applications on facilities that may be used to minimize visual impacts from development. (This concept is further discussed in Appendix D).

9.2 Proposed visual inputs

After a critical analysis of the proposed current architectural design, the following visual inputs (mitigation measures) techniques are proposed:

- The rooftop edge line towards the valley (eastern façade) should also have a green buffer strip similar to the west facing façade, this allows for further visual softening of the rooftop line for potential views from the east. Refer to Figure 39 and Figure 40;

- There should be a dense planting strip between the R534 and the parking area, this not only screens the building, but also creates a 'green tunnel effect' with views opening up when entering the complex which are in line with the landscape's character as discussed under Section 6.1. Refer to Figure 41 and Figure 42;

- The islands in the parking lot should mimic patterns of trees found in their natural environment, i.e., a combination of large, medium, and small trees planted densely in random clumps and not in rows. This can be achieved without changing the demarcated green spaces. Refer to Figure 41 and Figure 42;

- The zorbing space (artificial elements) must be screened from the parking area with a permeable screen (berms with clumps of trees/rehabilitation of existing vegetation).

The external berms could also assist with noise considering the location of the proposed auditorium. Refer to Figure 41 and Figure 42;

- If possible, planters (with indigenous vegetation) must be added to the skywalk. These planters must be recessed (on the inside of the skywalk) and protruding (on the outside of the Skywalk) in order to create depth and texture. Refer to Figure 43 - Figure 46.

- Strip planters must be added on the outside of the lift and the stairs, this will minimize straight vertical lines on the eastern façade and make it appear more organic. Glass panels must be avoided along the balustrade as it will cause unnecessary glare. Refer to Figure 47 and Figure 48;

- The routes should be upgraded to celebrate the natural environment and the "green tunnel effect" as explained under "Landscape character" in Section 6.1, and anything that is added should not detract from the focus of the view/s and must not create *any additional visual impact as it will further encroach on these scenic settings, compromising visitors' experiences.* The proposed conceptual squares, stand out as follies, and detract from the character of the landscape and the scenic views in these specific areas. The frames make the views appear much smaller which is in contrast to the grandeur of the actual scale. There should be no additional balustrades (except in areas where they are required for public safety), features and structures;

- Additional trees should be allowed for in the atrium space at the conference court (move the existing planter over the atrium space). It will allow for a more continuous tree canopy on the western and eastern façade, mimicking the silhouette of mountains and trees in the background. Refer to Figure 49 and Figure 50.

- The pavers in the parking driveway should be a "blended colour" (red brown and charcoal) and not a monotone light grey paver;

- Route signage should be grouped (where possible) and similar linear Corten steel elements as used in the landscape should form the basis for route signage. Avoid additional, materials, colouring and other elements;

- Hand railings (vertical elements) along the Skywalk should either be Corten, or a charcoal steel colour to blend in with the darker colours (shadows) of the rock face at the back.

Figure 39: Visual input 1_before mitigation

Figure 40: Visual input 1_after mitigation

Figure 41: Visual input 2,3,4_before mitigation

Figure 42: Visual input 2,3,4_after mitigation

Figure 43: Visual input 5_before mitigation

Figure 44: Visual input 5_after mitigation

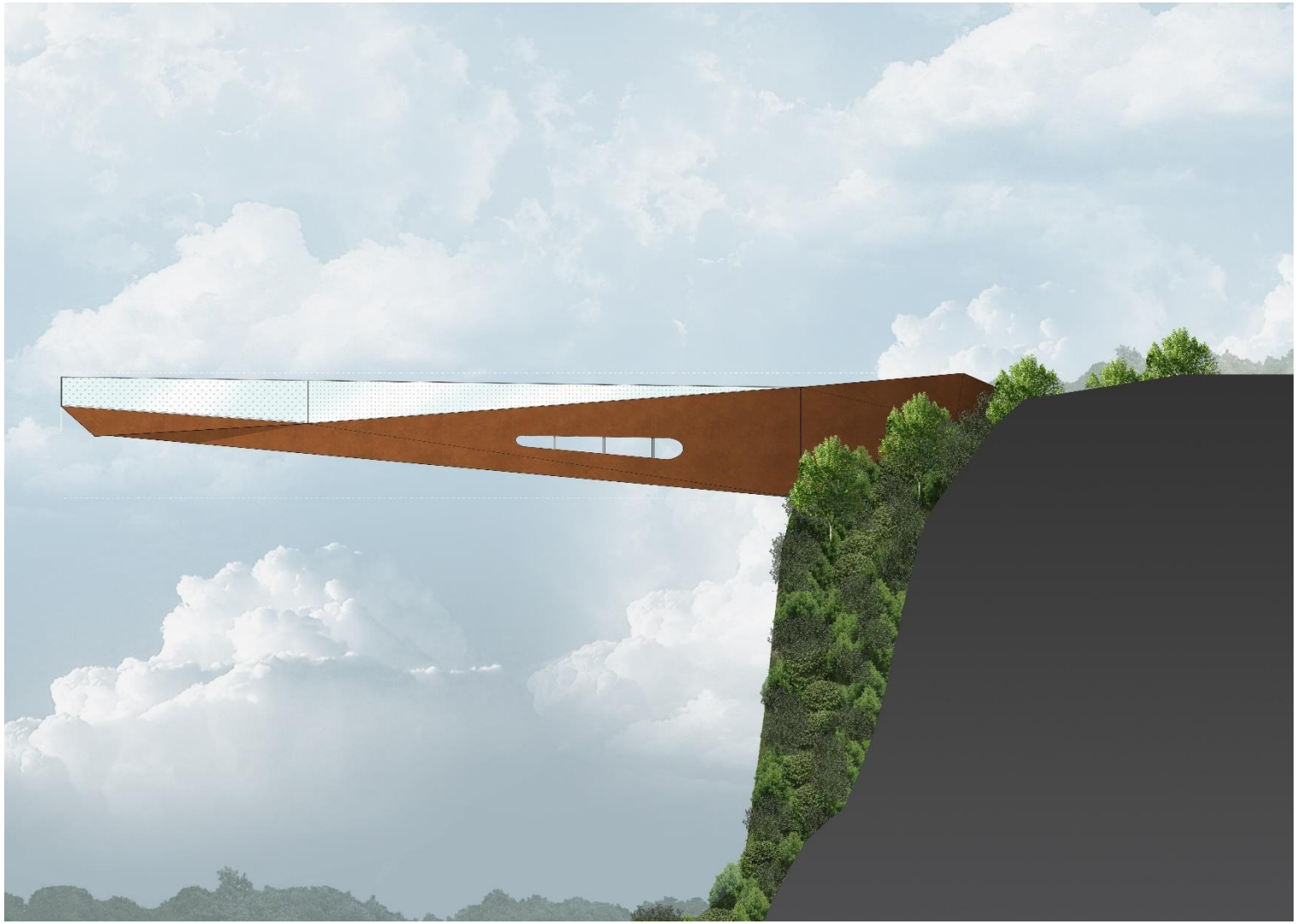

Figure 45: Visual input 5_before mitigation

Figure 46: Visual input 5_after mitigation

Figure 47: Visual input 6_before mitigation

Figure 48: Visual input 6_after mitigation

Figure 49: Visual input 8_before mitigation

Figure 50: Visual input 9_after mitigation

10 Conclusion

Based on the findings of this study it is evident that the proposed project is located in an area with a high visual quality and diverse topography offering breath taking views over the valley. Apart from the large sections of forest plantations, the landscape character can be described as natural and rural with various scenic tourist destinations located within natural forest vegetation and small towns within close range to the Site itself.

It was further concluded that there will be a potential intrusion on views which may lead to a change in the scenic resource and visual character, introducing a new precedent for development in the area. Potential impacts to the landscape and visual environment due to the proposed project have been identified, these include the impact on visual character and sense of place, impact on visual intrusion and VAC, the impact on visibility and visual exposure and the impact due to night time lighting. Based on the impact assessment, it was found that the various landscape and visual impacts would generally be moderate.

The potential landscape and visual impacts will be both positive and negative. With reference to the most recent architectural design concept, negative impacts are most likely associated with the construction stage of the project whereas impacts during the operational phase will potentially be twofold i.e., the existing sense of place and landscape character of the site will be permanently altered, but the new Skywalk will provide the user with an improved viewing experience.

During the construction phase, the intensity on tourists visiting the God's Window site will be the highest, however, it is assumed that the site will be closed to visitors when major construction commences (construction of the main building etc.). Motorists traveling along the R533 and R534 provincial roads as well as forestry workers in the plantations below and residents on the outskirts of Graskop may experience glimpses of higher construction elements such as cranes, scaffolding etc. Recreational users utilising the plantation roads and hiking routes in the area may also experience views of these higher construction elements.

During the operational phase of the project the proposed Skywalk will extend out over the cliff which will potentially make it visible to motorists traveling along the R533 and R534 provincial roads as well as to forestry workers in the plantations below and for residents on the outskirts of Graskop. As a result of the visually prominent Skywalk structure the landscape character and views from some of the existing God's Window platforms will be permanently changed. The project will furthermore act as a gateway project, allowing other similar projects to emerge within the Study Area and therefore adding to the possible cumulative effect along the Panoramic Route.

Theoretically the predicted visual impact [based on the Guideline for Involving Visual and Aesthetic Specialists on EIA processes (Oberholzer, B.2005)] is expected to be high, after assessing the nature of the development and the sensitivity of the existing landscape and visual environment it can be regarded as moderate based on the following:

- The project as a whole, will not be viewed in full range over short distances (distances less than 5km), but will be in full range view from isolated areas on the outskirts of Graskop which is more than 5km away from the impact;
- Even though the forest plantations detract from the natural character of the Study Area, it offers visual screening from a range of various locations throughout the Study Area;

- Highest visibility will be experienced from areas directly east of the Site; however, the intensity will be lowered as a result of the sheer viewing distance (5 -10km), low receptor sensitivity and access to the public is restricted;
- The Skybridge will not be visible from a significant distance as the eastern elevation mainly consist out of glass with the natural rock formation and vegetation as the background;
- As time goes by, vegetation will mature, and concrete elements will become browner due to the natural aging process of concrete which will make it less visible and inconspicuous;
- The current architectural concept design (assuming proposed mitigation measures are implemented where practically feasible) meets the objectives as set out in Section 9.1.

In light of the above and considering all factors (including the residual impact) the specialist is of opinion that (although the Skywalk Project will have a significant impact from various locations, especially from some of the existing viewing decks) the implementation of this project will not be unacceptable from a visual point of view. The introduction of new meaningful context driven infrastructure brings along a new 'sense of place' which, in this case, also provides positive visual outcomes. Compared to the design considered under the previous S&EIR, the most recent design respects and fits well within the landscape (low, long and linear building placed along the edge of the escarpment). Visual intrusion will be lowered by using materials such as Corten, natural rock, concrete and "infill" vegetation as a strategically placed visual softening technique. The concept of colour and camouflage as discussed in Appendix D, must be further investigated during the detail design phase.

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Appendix A: Impact assessment methodology

Calculations

This section outlines the proposed method and calculations for assessing the significance of the potential visual impacts as provided by Zutari (2022). The criteria include the magnitude (size or degree of scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale) and the extent (spatial scale). These numerical ratings are used in an equation whereby the consequence of the impact can be calculated as follows:

Consequence = type x (intensity +duration + extent)

To calculate the significance of an impact, the probability (or likelihood) of that impact occurring is applied to the consequence:

Significance = consequence x probability

Depending on the numerical result the impact would fall into a significance category as negligible, minor, moderate or major, and the type would be either positive or negative.

Magnitude

The magnitude refers to the degree of alteration of the affected environmental receptor, refer to Table A 1.

Table A 1: Description of magnitude and assigned numerical values

Numerical Rating	Category	Description
1	**Negligible**	Natural and/ or social functions and/ or processes are negligibly altered
2	**Very low**	Natural and/ or social functions and/ or processes are slightly altered
3	**Low**	Natural and/ or social functions and/ or processes are somewhat altered
4	**Moderate**	Natural and/ or social functions and/ or processes are moderately altered
5	**High**	Natural and/ or social functions and/ or processes are notably altered
6	**Very high**	Natural and/ or social functions and/ or processes are majorly altered
7	**Extremely high**	Natural and/ or social functions and/ or processes are severely altered

Duration

The duration refers to the length of permanence of the impact on the environmental receptor, refer to Table A 2

Table A 2: Description of duration and assigned numerical values

Numerical Rating	Category	Descriptors
1	**Immediate**	Impact will self-remedy immediately
2	**Brief**	Impact will not last longer than 1 year
3	**Short term**	Impact will last between 1 and 5 years
4	**Medium term**	Impact will last between 5 and 10 years
5	**Long term**	Impact will last between 10 and 15 years
6	**On-going**	Impact will last between 15 and 20 years
7	**Permanent**	Impact may be permanent, or in excess of 20 years

Extent

The extent refers to the geographical scale of impact on the environmental receptor, refer to Table A 3.

Table A 3: Description of duration and assigned numerical value

Numerical Rating	Category	Descriptors
1	**Very limited**	Impacts very limited / felt in isolated areas of the study area
2	**Limited**	Impacts limited to specific parts of the study area
3	**Local**	Impacts felt mostly throughout the study area
4	**Municipal area**	Impacts felt outside the study area, at a municipal level
5	**Regional**	Impacts felt outside the study area, at a regional / provincial level
6	**National**	Impacts felt outside the study area, at a national level
7	**International**	Impacts felt outside the study area, at an international level

Probability

To calculate the significance of an impact, the probability (or likelihood) of that impact occurring is also considered, refer to Table A 4.

Table A 4: Definition of probability ratings

Numerical Rating	Category	Descriptors
1	**Highly unlikely / None**	Expected never to happen
2	**Rare / improbable**	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
3	**Unlikely**	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
4	**Probable**	Has occurred here or elsewhere and could therefore occur
5	**Likely**	The impact may occur
6	**Almost certain / Highly probable**	It is most likely that the impact will occur
7	**Certain / Definite**	There are sound scientific reasons to expect that the impact will definitely occur

Significance

Table A 5: Application of significance ratings

Range		Significance rating
-147	**-109**	Major (-)
-108	**-73**	Moderate (-)
-72	**-36**	Minor (-)
-35	**-1**	Negligible (-)
0	**0**	Neutral
1	**35**	Negligible (+)
36	**72**	Minor (+)
73	**108**	Moderate (+)
109	**147**	Major (+)

When assessing impacts, broader considerations should also be considered. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Table A 6 - Table A 8.

Table A 6:Definition of confidence ratings

Rating	Descriptor
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Table A 7: Definition of reversibility ratings

Rating	Descriptor
Low	The affected environment will not be able to recover from the impact - permanently modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environmental will be able to recover from the impact

Table A 8: Definition of replaceability ratings

Rating	Descriptor
Low	The resource is not damaged irreparably or is not scarce
Medium	The resource is damaged irreparably but is represented elsewhere
High	The resource is irreparably damaged and is not represented elsewhere

Appendix B: Landscape and Visual Impact Methodology

Appendix B1: Landscape character

Landscape character is a distinct, recognisable, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse. Landscape character includes the natural and man-made attributes of the Study Area, including topography, land cover and vegetation. The overall landscape character is influenced negatively by incompatible activities, or positively by the presence of natural and/or man-made features, such as steep gradients, presence of rocky ridges, natural vegetation, pans, and floodplains.

Landscapes may be divided according to landscape character types, which are defined as distinct types of landscape that are relatively homogenous in character. These landscape types are generic and may occur anywhere in the country where the same combinations of physical and cultural landscape attributes occur. Aesthetic aspects of landscape character can be recorded in a systematic and objective way according to the following range of aspects:

- Scale
- Enclosure
- Diversity
- Texture
- Form
- Line
- Colour
- Balance
- Pattern
- Movement

In addition to the aesthetic aspects other aspects of landscape perception can further influence landscape character and may be more subjective and responses to them might be more personal and coloured by the experience of the individual. Such factors include a sense of wildness, sense of security, the quality of light and perceptions of beauty or scenic attractiveness. There are also some factors that can be perceived or experienced by senses other than sight, such as noisiness or tranquillity and exposure to the elements Swanwick (2002).

Table B 1: Aesthetic and perceptual aspects of landscape character Swanwick (2002)

Aspect	Characteristics				Motivation
Scale	Intimate	Small	Large	Vast	The scale of the landscape is considered as large because of the undulating topography associated with rolling hills, cliffs, valley bottoms and plateaus. Timber plantations severely obscure views and the scale of the landscape from within these areas can be considered small.
Enclosure	Tight	Enclosed	Open	Exposed	The landscape of the Study Area can be described as enclosed (valleys with timber plantations) as well as exposed especially in areas associated

Aspect	Characteristics				Motivation
					with viewpoints across the Blyde River Canyon.
Diversity	Uniform	Simple	Diverse	Complex	The landscape within the Study Area can be described as complex as it consists out of a variety of landforms (sheer cliffs, plateaus, rolling hills and valleys) and a variety of vegetation types including timber plantations, grassland shrubs and small trees between rocky outcrops.
Texture	Smooth	Textured	Rough	Very rough	The landscape can be described as rough due to the forest vegetation visible amongst the angular rocky cliffs, rock outcrops and isolated patches of shrubs and small trees standing in contrast with the smoother grasslands associated with higher laying plateaus.
Form	Vertical	Sloping	Rolling	Horizontal	The dominant form of the Study Area can be described as rolling; however, the form of the God's Window site can be described as vertical, with a sudden and sheer drop as one approaches the edge of the escarpment.
Line	Straight	Angular	Curved	Sinuous	The main landscape elements are mostly angular (escarpment) and sinuous, as the main roads meander through the landscape. There are little linear elements present within the Study Area.
Colour	Monochrome	Muted	Colourful	Garnish	The colours associated with the landscape are shades of light to dark grey/ brown (associated with cliff faces) and light green (grass) to vibrant and deep green (the colour associated with timber plantations and dominating the landscape scene). Landscape colours will be affected during different seasons, colours will become more muted during winter months.
Balance	Harmonious	Balanced	Discordant	Chaotic	The landscape is considered discordant in terms of the relationship between the vertical and horizontal landscaped elements.
Pattern	Random	Organised	Regular	Formal	The landscape is considered regular with elements being evenly spaced.

Aspect	Characteristics				Motivation
Movement	Dead	Still	Calm	Busy	The movement within the largest part of the Study Area is considered calm during the week whereas it can be described as busy over weekends and holidays. Movement on gravel roads can be considered still, and mainly used by large trucks transporting tree logs. Various tourist busses are visible on the R53 Panorama Route (this road is also well used by motor bike drivers who undertake weekend excursions along the Study Areas' panoramic routes).

Appendix B2: Visual Absorption Capacity

VAC is an indication of the ability of the landscape to visually conceal the proposed development. Areas with high VAC can accommodate and absorb physical changes in the landscape without transforming its visual character and quality, while a low VAC rating implies a low ability to absorb or conceal visual impacts (Oberholzer, B .2005). The factors that contribute to the VAC factor includes topographical diversity, vegetation, soil contrast, visual pattern, and recovery time.

The factors are listed and explained below and adapted from the United States Bureau of Land Management (BLM, 2004).

Table B 2: VAC factors and rating

Factors	Rating criteria and score		
Vegetation	Low, uniform vegetation type. Typically, less than 1m in height lacking in variety and usually uniform in colour with minimal screening capability. Low scrub and grass type vegetation. Score:1	Vegetation of moderate height between 1 -2m with some variation in colour and type. Effectively screens low surface disturbance. Scrub/ grass with intermingled shrubs. Score:2	Vegetation of more than 2m in height. Continuous cover with significant screening potential for projects between 4 -6m in height. Score:3
Soil contrast	Surface disturbance would expose a high degree of contrast in colour with surrounding soil, rock and vegetation. Score:1	Surface disturbance would expose a moderate degree of contrast in colour with surrounding soil, rock and vegetation. Score:2	Surface disturbance would expose a high degree of contrast in colour with surrounding soil, rock and vegetation. Score:3
Visual variety	Rating units exhibits a low degree of visual variety in terms of the landscape character elements of form, line and texture with minimal variety in landforms, vegetation or colour. Score:1	Rating units exhibits a moderate degree of visual variety in terms of the landscape character elements of form, line and texture with moderate variety in landforms, vegetation or colour. Score:2	Rating units exhibits a high degree of visual variety in terms of the landscape character elements of form, line and texture with high variety in landforms, vegetation or colour. Score:3

Topographical diversity	Landform has low amount of topographic diversity and variety. Score:1	Landform has moderate amount of topographic diversity and variety. Score:2	Landform has high amount of topographic diversity and variety. Score:3
Recovery time	Long term recovery time, longer than 5 years. Score:1	Moderate recovery time (3 to 5 years) Score:2	High recovery time (less than 3 years) Score:3

Scores, when added, which amount to between 5 -7 and are categorised as Low, scores between 8 -11 as Moderate and between 12 -15 as High.

VAC is further closely related to visual intrusion, which refers to the physical characteristics and nature of the contrast created by a project on the visual aspects of the receiving environment. It is also, as with VAC, a measure of the compatibility or the conflict of a project with the existing landscape and surrounding land use. Visual intrusion is rated in Appendix C3.

Table B 3: VAC scores achieved

Factor	Score obtained	Motivation
Vegetation	2.5	The site during the time of assessment the natural vegetation comprised out of open grassland patches and areas of natural dense vegetation, where the average height of smaller trees and shrubs ranged between 2 - 3m and larger trees in excess of 7m. Timber plantations have a height of between 10 -15m. The vegetative component associated with the Study Area will provide screening ability for infrastructure to some degree, especially from views across timber plantations and where natural vegetation is lush, providing some form of screening ability.
Soil contrast	2	The site visit was during the rainy season, soil contrast could be lower during the winter months (dry season) or when extreme drought conditions are experienced.
Visual variety	3	Visual variety is high due to the presence of natural scenic elements such as waterfalls, perpendicular cliffs, mountains, rock outcrops, large vegetation diversity, timber plantations and associated infrastructure, small town infrastructure and tourist accommodation. All of this serve to create visual variety in terms of line, colour and texture.
Topographical diversity	3	The landform has high levels of topographic diversity.
Recovery time	1	Even though the Study Area presented as lush and green, the recovery period for trees and shrubs to fully mature, will take more than 5 years. It is highly unlikely that cliff vegetation will be able to recover completely after construction activities.
Total	**11.5**	**Moderate - High**

Appendix B3: Visual intrusion

The degree of visual intrusion is closely related to the VAC and maintaining the integrity of the landscape and essentially rates the degree of contrast between the appearance of the proposed development and the existing environment. The higher the landscape quality and the more consistent the visual context, the more likely the impact will be intrusive. Visual intrusion is rated according to the table below.

Table B 4: Visual intrusion ratings

Rating	Criteria
High	Results in a noticeable change or is discordant with the landscape
Moderate	Partially fits into the landscape, but clearly noticeable
Low	Minimal change or blends in well with the surrounding landscape

Appendix B4: Landscape quality

Landscape quality is based on human perceptions and expectations in the context of the existing environment. A landscape's visual quality is therefore a factor of an observer's emotional response to physical landscape characteristics and therefore assigning values to visual resources is therefore a subjective process.

According to the BLM division VRM system, a system specifically developed for minimising the visual impacts of surface disturbing activities and maintaining scenic values for the future. The landscape's scenic quality can be evaluated based on a combination of the landscape's intrinsic physical properties, consisting of the landform, vegetation, water, colour, adjacent scenery, scarcity and cultural or man-made modifications.

Landscape quality increases with the presence of water, topographic ruggedness and where diverse patterns of vegetation occur. Areas that contain more natural features or harmonious man-made compositions will have a more favourable landscape quality than areas with non-harmonious human activity.

Table B 5: Landscape Quality: Explanation of rating criteria

Factor	Definition
Landform	Topography becomes more interesting as it gets steeper or more massive, or more severely or universally sculptured. Outstanding landforms may be monumental, or they may be exceedingly artistic and subtle.
Vegetation	Give primary consideration to the variety of patterns, forms, and textures created by plant life. Consider short-lived displays when they are known to be recurring or spectacular. Consider also smaller scale vegetation features, which add striking and intriguing detail elements to the landscape.
Water	That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration in selecting the rating score.
Colour	Consider the overall colour(s) of the basic components of the landscape (e.g., soil, rock, vegetation, etc.) as they appear during seasons or periods of high use. Key factors to use when rating "colour" are variety, contrast, and harmony.
Adjacent scenery	Degree to which scenery outside the scenery unit being rated enhances the overall impression of the scenery within the rating unit. The distance which adjacent scenery will influence scenery within the rating unit will normally range from 0-8 kilometres, depending upon the characteristics of the topography, the vegetative cover, and other such factors. This factor is generally applied to units that would normally rate very low in score, but the influence of the adjacent unit would enhance the visual quality and raise the score.
Scarcity	This factor provides an opportunity to give added importance to one or all the scenic features that appear to be relatively unique or rare within one physiographic region. There may also be cases where a separate evaluation of each of the key factors does not give a true picture of the overall scenic quality of an area. Often it is a number of not so spectacular elements in the proper combination that produces the most pleasing and memorable scenery - the scarcity factor can be used to recognize this type of area and give it the added emphasis it needs.
Cultural modifications	Cultural modifications in the landform/water, vegetation, and addition of structures should be considered and may detract from the scenery in the form of a negative intrusion or complement or improve the scenic quality of a unit. Rate accordingly.

Table B 6: Landscape quality: Rating criteria and scoring system

Factor	Rating Criteria and Score		
Landform	High vertical relief as expressed in prominent cliffs, spires, massive rock outcrops, areas of severe surface variation, highly eroded formations, dune systems or detail features that are dominant and	Steep canyons, mesas, buttes, interesting erosional patterns, landforms of variety in size and shape or detail features, which are interesting though not dominant or exceptional.	Low rolling hills, foothills, or flat valley bottoms or few or no interesting landscape features.

	exceptionally striking and intriguing. Score: 5	Score: 3	Score: 1
Vegetation	A variety of vegetative types as expressed in interesting forms, textures, and patterns. Score: 5	Some variety of vegetation, but only one or two major types. Score: 3	Little or no variety or contrast in vegetation. Score: 1
Water	Clear and clean appearing, still, or cascading white water, any of which are a dominant factor in the landscape. Score: 5	Flowing, or still, but not dominant in the landscape. Score: 3	Absent, or present, but not noticeable. Score: 0
Colour	Rich colour combinations, variety, or vivid colour; or pleasing contrasts in the soil, rock, vegetation or water. Score: 5	Some intensity or variety in colours and contrast of the soil, rock and vegetation, but not a dominant scenic element. Score: 3	Subtle colour variations, contrast, or interest; generally mute tones. Score: 1
Adjacent scenery	Adjacent scenery greatly enhances visual quality Score: 5	Adjacent scenery moderately enhances overall visual quality. Score: 3	Adjacent scenery has little or no influence on overall visual quality. Score: 0
Scarcity	One of a kind, unusually memorable or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing, etc. Score: 5	Distinctive, though somewhat similar to others within the region. Score: 3	Interesting within its setting, but fairly common within the region. Score: 1
Cultural Modifications	Modifications add favourably to visual variety while promoting visual harmony. Score: 2	Modifications add little or no visual variety to the area, and introduce no discordant elements Score: 0	Modifications add variety but are very discordant and promote strong disharmony. Score: -4

Total scores amounting to less than 11, are categorised as Low, scores between 12 -18 as Moderate and scores higher than 19 as High.

Table B 7: Landscape quality rating

Factor	Score obtained	Motivation
Landform	5	The landscape provides a high amount of topographical variety in the form of sheer cliffs, rolling hills, valleys and plateaus. The landform becomes more intricate as the receptor gets closer to the edge of the escarpment.
Vegetation	4	The vegetation associated with the site offers a variety of vegetative types, forms and textures such as grasses, bigger shrubs and small to large trees as well as timber plantations.
Water	4	Ground water seepage is evident along the existing rock paths, drainage lines (associated with small waterfalls) trickles down the rocky cliff edge. Other larger rivers such as the Maritsane, Koedoespruit, and the Ngwaritsane are visible from the various God's Window viewpoints.
Colour	4	There are various colour combinations which offer pleasing contrast between soil, rock vegetation and water, however it does not totally dominate the visual scene.
Adjacent Scenery	4	The adjacent scenery such as the existing scenic viewpoints and vistas overlooking waterfalls, cliffs and indigenous forest which enhances the landscape quality; however, the timber plantations somewhat detract from this.
Scarcity	4	Even though the God's Window viewpoint is one of the most popular viewpoints in the greater region with a sheer drop which varies between

		800 – 900m, the landscape of the site is in general not unique to the larger region, similar sites (lookout points) is located along the R534.
Cultural modifications	-2	Proposed infrastructure will add visual variety but will introduce discordant elements in the Study Area. Other anthropogenic infrastructure related to lookout points are present and moderately influence the quality of the landscape.
Total	**23**	**High**

Appendix B5: Landscape Value

Landscape value is concerned with the relative value attached to a specific landscape by society, bearing in mind that a landscape may be valued by different stakeholders for a whole variety of reasons. Value can apply to areas of landscape as a whole or to the individual elements, features and aesthetic or perceptual dimensions which contribute to the character of the landscape. (IEMA, 2013)

In determining landscape value, the people, or groups of people who could be affected by the proposed development should be considered, due to landscape being valuable to people in different ways. In this regard, consideration is given:

- People who live and work in an area may have a different perception of the landscape to that held by visitors because of their regular contact with the landscape and the ongoing changes within it;
- Special interest, for example the ecological, cultural, or historic value of the landscape, as knowledge of these issues can often affect people's perception and appreciation of a landscape; and
- Landscapes valued by a public wider than the local population because they have a strong image or are well known and valued nationally and internationally.

Landscape value is based on receptor perception and is rated in the table below:

Table B 8: Receptor perception rating

Rating	Criteria
High	People attach a high value to aesthetics, such as in or around a game reserve, coastal areas, scenic routes or conservation areas, and the project is perceived to significantly impact on this value of the landscape
Moderate	People attach a moderate value to aesthetics, such as neighbourhoods and smaller towns, where natural character is still plentiful and in close range of residency.
Low	People attach a low value to aesthetics, when compared to employment opportunities. Environment has already been transformed

Appendix B6: Night time lighting

To determine the potential visual impact of nighttime lighting, it is important to understand the existing lighting levels within the Study Area. The Institute for Lighting Professionals ILP (2011) identifies five zones of environmental zones for exterior lighting control, describing the existing lighting conditions within the landscape. These zones are supported by design guidelines to reduce lighting pollution, which can inform mitigation measures.

Table B 9: Environmental zones for night time lighting ILP (2011)

Environmental Zones	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO starlight reserves, IDA dark sky parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Beauty
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations

E3	Suburban	Medium district brightness	Small town centers or suburban
E4	Urban	High district brightness	Town/City centers with high levels of nighttime activity

Light pollution falls within the following categories, ILP (2011):

- Skyglow: Wasteful light from artificial sources emitted upward (at horizontal angles and higher) is scattered by aerosols such as clouds and fog or small particulates like pollutants in the atmosphere. This scattering forms a diffuse glow that can be seen from far away. Skyglow is the most known form of light pollution.
- Light trespass: Unwanted light at night can seep through the windows of houses and buildings, causing sleeping disorders due to overexposure to light.
- Glare: Excessive brightness at night creates high contrast and decreased visibility, causing discomfort or, in extreme cases, a blinding effect.
- Lighting from vehicles within rural areas will generally be more intrusive than in urban settings and could therefore potentially have a greater impact due to general lack of existing ambient light within areas further away from the Study Area.

The ILP (2011) recommends that to maintain the nighttime setting, lighting within the identified zone should have minimal illumination into the sky as well as adjacent viewpoints.

Appendix B7: Visual receptors

Receptor sensitivity

Receptors for visual impacts are potential viewers of the proposed development. The perception of viewers is difficult to determine as there are many variables to consider such as:

- Familiarity with the actual scene;
- The location and context of the viewpoint;
- Circumstances that bring them into contact with that view (occupation or activity of the receptor) and;
- Nature and importance of the view (full or glimpsed, near or distant).

Other variables include cultural background, state of mind and how often the proposed project is viewed within a set period, it is therefore necessary to generalize the viewer sensitivity to some degree.

- Potential visual receptors that may be affected by the proposed project include:
- Users of recreational landscapes and public footpaths, including tourists and visitors;
- Residents;
- Users of public sports grounds and amenity open space;
- Users of public roads and railways;
- Workers; and
- Views of or from within valued landscapes

Of the above visual receptors as mentioned above the most sensitive may include:

- Users of outdoor recreational facilities, whose attention or interest is focused on the landscape;

- Communities where the proposed development results in changes in the landscape setting or valued views enjoyed by them; and
- Residential property owners with views affected by the proposed development.

Table B 10: Receptor sensitivity rating

Receptor sensitivity	Explanation
High	Views to and from nature reserves, coastal areas, heritage sites and scenic routes or trails
Moderate	Views to and from residential areas, agricultural areas, sporting / recreational areas or places of work
Low	Views to and from industrial, mining, or degraded areas.

Appendix B8: Visual exposure and visibility

Visibility

Visibility is determined by the distance between the proposed project components and the visual receptor. The visibility or viewshed/ZTV of the project is the area from which the project will be visible and includes all the major observation sites from where the proposed project will be visible. The viewshed is theoretical as it assumes direct line of sight between any point within the viewshed and the object being viewed.

A Geographic Information System (GIS) has been used to generate the viewshed analyses for the proposed project and related infrastructure. The system has 3D topographical modelling capabilities, including a line-of-sight analysis. For this project, the viewshed analysis was generated by means of contours using the proposed project and height of the associated infrastructure. The visibility of a development and its influence on visual impact is rated using the criteria listed in Table B 11 below.

Table B 11: Visibility classes, IEMA (2013)

Class	Description
Highly visible	Clearly noticeable within the observer's view frame 0-5km
Moderately visible	Recognisable feature within the observer's view frame 5-10km
Marginally visible	Not particularly noticeable within the observer's view frame 10-15km
Hardly visible	Practically not visible unless pointed out to observer beyond 15km

Visual exposure

Visual exposure refers to the geographic area from which the proposed project will be visible and is defined by the degree of visibility of a proposed project from various receptor sites. According to Hull and Bishop (1998), the visual exposure of the proposed project is based on the distance from the proposed source of impact and usually fades out beyond 7km. The visibility of an object decreases exponentially over distance and accordingly visual impact will diminish as the viewer moves away from the object being viewed. It is also important to note that the actual zone of visual influence of the proposed project may be smaller than indicated because of screening by existing vegetation and infrastructure. The influence of distance is shown in Figure B 1 below.

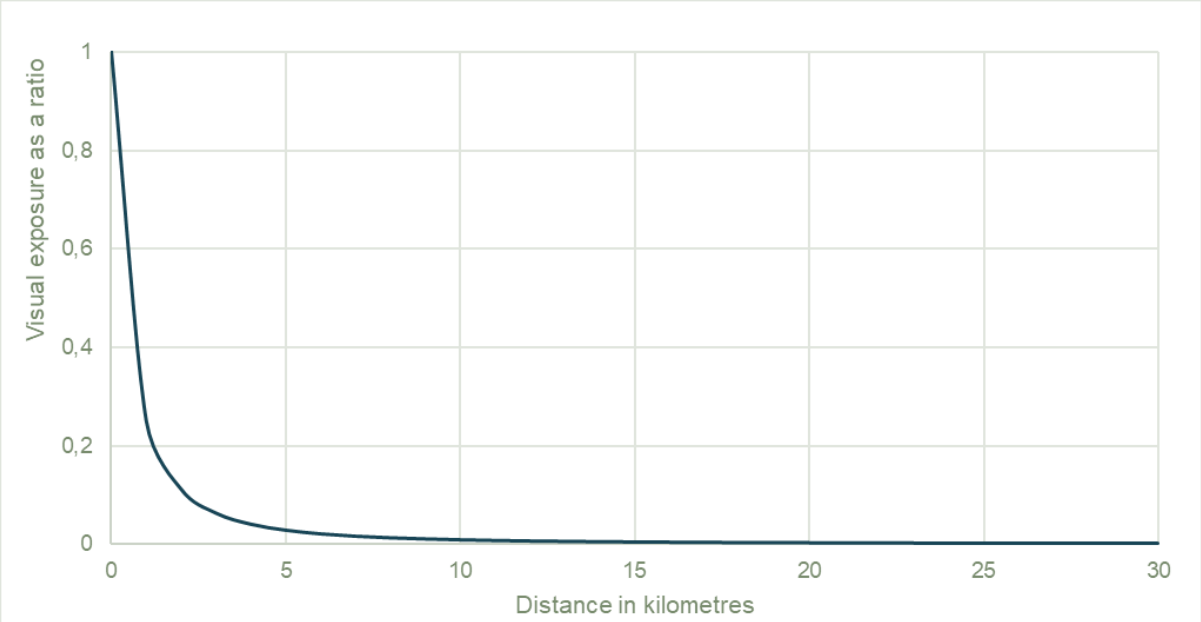


Figure B 1:Visual exposure (Bishop and Hull, 1988)

Viewshed Analysis

The viewshed analysis calculates the geographical locations from where the proposed project might be visible. This potential visual exposure of the project has been modelled by creating a DTM from 1m contour data, and applying a viewshed analysis using GIS software, whereby all areas with a line of sight towards the proposed project is indicated. It must be noted that the heights of existing infrastructure and vegetation are not included in the calculation of the viewshed as these factors have too much variability in terms of seasonal change and possible land use changes in an extensive Study Area such as the one being assessed. It is therefore important to bear in mind that the proposed development will not be visible from all points within the viewshed, as views may be obstructed by visual elements, whereby such intervening objects will modify the viewshed at ground level.

Appendix B9: Key Observation Points

KOPs were identified based on prominent viewpoints where views towards the proposed project and associated infrastructure where uninterrupted as well as at points where positive viewshed areas intersect with potential receptors. The KOPs were selected and the analyses have been conducted by investigating the visual influence of the proposed infrastructure as per the available layout and information provided.

Appendix C: Impact Rating Tables

Ref:	1			
Project phase	**Construction**			
Impact	**Impact on landscape character and sense of place**			
Description of impact	**Change in the landscape character and sense of place by constructing the Skywalk (which will protrude over the cliff's edge), Skybridge and main building which will have a larger footprint than the existing infrastructure on site.**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**None**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Short term	impact will last between 1 and 5 years
Extent	Municipal area	Impacts felt at a municipal level	Municipal area	Impacts felt at a municipal level
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Moderate - negative**		**Moderate - negative**	
Comment on significance	Refer to section 7.2 in the report			
Cumulative impacts	Refer to section 7.3 in the report			

Ref:	2			
Project phase	**Operation**			
Impact	**Impact on landscape character and sense of place**			
Description of impact	**Change in the landscape character and sense of place by operating the Skywalk (which will protrude over the cliff's edge), Skybridge and main building which will have a larger footprint than the existing infrastructure on site.**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**Refer to Section 9 of the report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Positive		Positive	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Municipal area	Impacts felt at a municipal level	Municipal area	Impacts felt at a municipal level
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Very high	Natural and/ or social functions and/ or processes are majorly altered
Probability	Likely	The impact may occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Moderate - positive**		**Moderate - positive**	
Comment on significance	Refer to section 7.2 in the report			
Cumulative impacts	Refer to section 7.3 in the report			

Ref:	3			
Project phase	**Operation**			
Impact	**Impact on landscape character and sense of place**			
Description of impact	**Change in the landscape character and sense of place by operating the Skywalk (which will protrude over the cliff's edge) Skybridge and main building which will have a larger footprint than the existing infrastructure on site.**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**None**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Municipal area	Impacts felt at a municipal level	Municipal area	Impacts felt at a municipal level
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Moderate - negative**		**Moderate - negative**	
Comment on significance	Refer to section 7.2 in the report			
Cumulative impacts	Refer to section 7.3 in the report			

Ref:	4			
Project phase	**Construction**			
Impact	**Impact on visual intrusion and VAC**			
Description of impact	**The level of compatibility and the ability of the landscape to visually absorb the proposed infrastructure, including contrast in form, line, colour and texture as a result of vegetation clearing**			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	**Refer to section 8 and 9 in the report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Short term	impact will last between 1 and 5 years
Extent	Municipal area	Impacts felt at a municipal level	Local	Extending across the site and to nearby settlements
Intensity	Extremely high	Natural and/ or social functions and/ or processes are severely altered	Very high	Natural and/ or social functions and/ or processes are majorly altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	High	The resource is irreparably damaged and is not represented elsewhere	High	The resource is irreparably damaged and is not represented elsewhere
Significance	**Moderate - negative**		**Minor - negative**	
Comment on significance	Refer to section 7.2 in the report			
Cumulative impacts	Refer to section 7.3 in the report			

Ref:	5			
Project phase	**Operation**			
Impact	**Impact on visual intrusion and VAC**			
Description of impact	**The level of compatibility and the ability of the landscape to visually absorb the proposed infrastructure, including contrast in form, line, colour and texture as a result of vegetation clearing**			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	**Refer to section 8 and 9 in the report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Municipal area	Impacts felt at a municipal level	Municipal area	Impacts felt at a municipal level
Intensity	Extremely high	Natural and/ or social functions and/ or processes are severely altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	High	The resource is irreparably damaged and is not represented elsewhere	High	The resource is irreparably damaged and is not represented elsewhere
Significance	**Moderate - negative**		**Moderate - negative**	
Comment on significance	Refer to section 7.2 of the report			
Cumulative impacts	Refer to section 7.3 of the report			

Ref:	6			
Project phase	**Construction**			
Impact	**Visual exposure and visibility impacts**			
Description of impact	**The visibility of construction related machinary and equipment and the change in views from main roads and other key observation points as well as the progressive visual exposure of the proposed project.**			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	**Refer to section 8 and 9 in the report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Short term	impact will last between 1 and 5 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Extremely high	Natural and/ or social functions and/ or processes are severely altered	Very high	Natural and/ or social functions and/ or processes are majorly altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	High	The resource is irreparably damaged and is not represented elsewhere	High	The resource is irreparably damaged and is not represented elsewhere
Significance	**Moderate - negative**		**Moderate - negative**	
Comment on significance	Refer to section 7.2 of the report			
Cumulative impacts	Refer to section 7.3 of the report			

Ref:	7			
Project phase	**Operation**			
Impact	**Visual exposure and visibility impacts**			
Description of impact	**The visibility and the change in views from main roads and other key observation points as well as the progressive visual exposure of the proposed project.**			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	**Refer to section 8 and 9 in the report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Very high	Natural and/ or social functions and/ or processes are majorly altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Likely	The impact may occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	High	The resource is irreparably damaged and is not represented elsewhere	High	The resource is irreparably damaged and is not represented elsewhere
Significance	**Moderate - negative**		**Moderate - negative**	
Comment on significance	Refer to section 7.2 of the report			
Cumulative impacts	Refer to section 7.3 of the report			

Ref:	8			
Project phase	**Construction**			
Impact	**Night time lighting**			
Description of impact	**The visibility of night time lighting during the construction phase of the project**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**Refer to section 8 in the report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Short term	impact will last between 1 and 5 years
Extent	Municipal area	Impacts felt at a municipal level	Local	Extending across the site and to nearby settlements
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Likely	The impact may occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Moderate - negative**		**Minor - negative**	
Comment on significance	Refer to section 7.2 of the report			
Cumulative impacts	Refer to section 7.3 of the report			

Ref:	9			
Project phase	**Operation**			
Impact	**Night time lighting**			
Description of impact	**The visibility of night time lighting during the construction phase of the project**			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	**Refer to section 8 in the report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Likely	The impact may occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Moderate - negative**		**Moderate - negative**	
Comment on significance	Refer to section 7.2 of the report			
Cumulative impacts	Refer to section 7.3 of the report			

Appendix D: Camouflage and colouring technique

In order to balance the need for development and the protection of natural, cultural, and scenic resources, the [3]Bureau of Land Management (BLM) has supported efforts to develop effective strategies for minimizing impacts to landscape and visual resources, especially the concealment of built facilities within scenic settings.

Background to camouflage technology

Modern camouflage technology has its roots in the art community where the first camouflage techniques were used during World War I and was called dazzle camouflage and was not meant to hide but to disrupt the form of naval warships. Camouflage was expanded by adding concealment as an objective. Additional patterns were developed and applied to not only ships, but also to uniforms, aircraft, and vehicles. Some current camouflage techniques are used to break up the geometric form of facilities, using highly contrasting colours to mimic the patterns of light and shadow in the landscape.

Use for facilities

Camouflage is effective for visual mitigation when multiple colours are applied in an organic pattern that replicates the natural textures, breaking up the form of an object. The colours of the pattern should repeat the colours seen in the surrounding landscape—including the shadows—to create the illusion that the object is part of its surroundings, both positive and negative space. The simulation below provides an example of how camouflage applications can break up the form of an object.

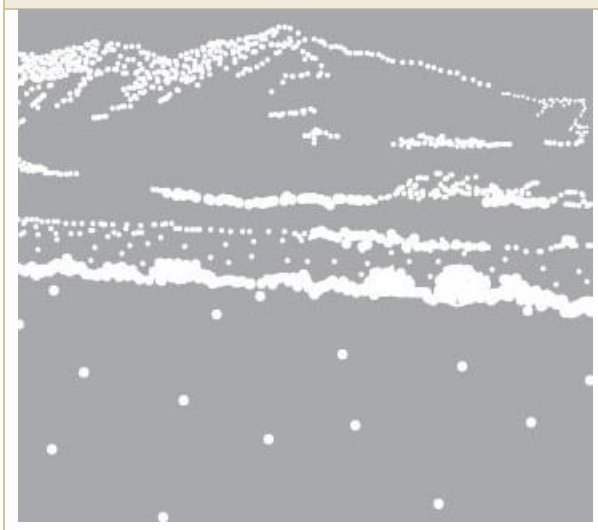
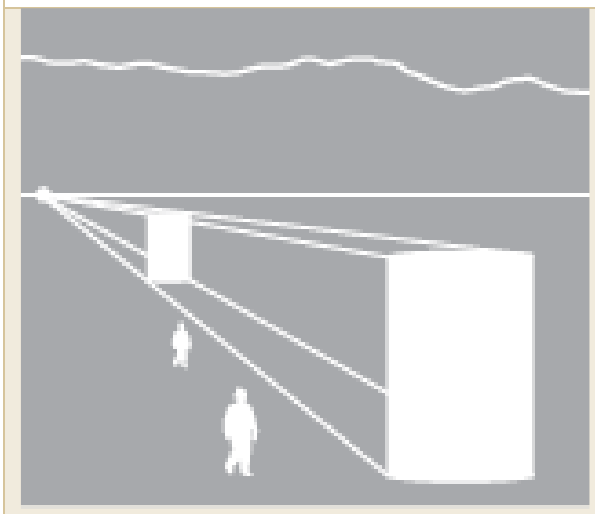
[3] The The Bureau of Land Management is an agency within the United States Department of the Interior responsible for administering federal lands.

Visual perception

This visual information of an object or landscape setting can be categorized into five elements: form, line, colour, texture, and scale. The incongruity of certain facilities in a landscape can be jarring to the visual senses and may negatively impact our perception of the visual scenery. By modifying the form, line, colour, and texture to mimic the visual characteristics of the surrounding natural environment, the visual impacts of intrusive structures can be diminished. Along with proper siting in the landscape, repeating the colours and textures of the surrounding landscape can help minimize the visual contrast of facilities and structures.

In sensitive landscapes where development may compromise the visual resource, or where distance and siting alone are not sufficient to conceal facilities, it may be necessary to apply a single colour or a multi colour camouflage treatment in order to meet visual objectives.

The elements of visual information	
	**Form** is defined as the mass or shape of objects in the landscape.
	**Line** is the real or imagined path the eye follows when viewing the landscape.

The elements of visual information	
	**Colour** is the major visual property of reflecting light of a particular intensity and wavelength from surfaces and creates the visual contrast of the landscape.
	**Texture** is the aggregation of small forms or colour mixtures into a continuous overall surface pattern of objects, often vegetation, in the landscape.
	**Scale** is the proportionate size relationship between an object and the surroundings in which it is placed.

Single colour treatment vs. Camouflage technology

The project team must consider predominant soil colour, vegetation colour, degree of texture and colour variation, distance, and primary observation direction in order to make informed decisions regarding colour applications. Some conditions or combinations of conditions lend themselves more appropriately to single-color applications, while highly contrasting and textured landscapes may warrant the use of camouflage. A site visit will establish whether a single-color treatment is adequate or if a multiple-colour treatment would be more effective.

A site evaluation includes:

- Selection of KOPs
- Determination of primary viewing season (when selecting colours, seek the best overall solution for the widest range in seasons or for the most important season).

Single-color treatment is the most conventional best management practice for reducing adverse visual impacts. In most circumstances, this treatment will likely produce the most affordable and acceptable results in visual impact reduction.

Since multiple-colour camouflage mimics the landscape's texture on untextured facilities, the effectiveness diminishes over a range of distance. The visual properties of the treated object begin to lose their integrity as compared to those of the naturally textured landscape. The object will begin to mute into a single perceived colour when viewed from more distant locations, while colour variation in the textured landscape remains visually apparent. Camouflage treatment is more effective when the observer's position to the treated facility is within a range of 400 m to 1,6km. This range may expand either way depending on the scale of the facility being proposed. Single-color treatments will likely produce the best results in fine-textured landscapes with little colour variation, whereas multiple-colour camouflage treatments will render enhanced results in landscapes with greater levels of colour variation coupled with medium to coarse textures. Camouflage treatments also work well in single-color landscapes with coarser textures.

Single colour selection methodology

- Create test colour panels by applying the selected paint to individual pieces of plywood or similar material;
- Place the panels in the landscape at the approximate location of the facility. Ensure careful placement of the panels to avoid a shadow effect from back-lighting;
- Evaluate the panels from a distance in increments of 60 m up to 300m from the project location to the KOPs; and
- Eliminate colours that contrast most in the landscape, selecting a maximum of three or perhaps four for further evaluation;

(When using a single-color application, consider that darker colours recede into the landscape while lighter colours tend to stand out. It is important to select colours a shade or two darker than the predominant colour in the landscape, which will also help reduce the effects of fading over time).

Camouflage selection methodology

A facility is a candidate for camouflage treatment if it is within 1,6km from a KOP, if the surrounding landscape has special scenic values and/or cultural landscape sensitivities, and if the landscape has a medium to coarse texture.

After various studies done by the BLM the Corona pattern consistently outperformed other patterns in the field and nearly disappears into this grayscale simulation as illustrated below.

Using the standard three-colour Corona pattern still requires adjusting colours in the field and scaling the pattern as illustrate below.

The goal of using camouflage applications is to mimic the balance of light and dark, or contrast, in the surrounding environment. Camouflage applications are most successful at distances between 200m and 1,2km; at closer distances, camouflage may actually make facilities stand out, while a single-colour application may be just as successful for facilities further away than 1,2km. Based on the distances of the facility from the KOPs, the scale of the standard pattern may need to be adjusted to maximize results. The rule of thumb is that the further the distance, the greater the scaling, which will increase the pattern's range of effectiveness.

Camouflage patterns

A custom pattern should best repeat the textures in the landscape immediately surrounding the project. A finely textured pattern with many colours may be more effective when viewed at shorter distances whereas a finely textured pattern tends to blur into a solid colour from

distances further away. Patterns with coarser textures and two to three highly contrasting colours are better suited to distances beyond 200m. The goal of using camouflage applications is to mimic the balance of light and dark, or contrast, in the surrounding environment. For a two-colour application, the colour choices should include one dark tone and one lighter tone. This creates a transparent effect by contrasting the sun-exposed surfaces and the interstitial shade and shadows. In landscapes with more visual variety, custom camouflage patterns using three colours are more complicated, but also more effective. Again, these patterns may include a lighter colour, contrasted with black as the dark shadow colour, and a mid-range shade.

For further detail reference can be made to "*United States Department of Interior, Bureau of Land Management (BLM) (1984) The use of colour for camouflage concealment of facilities. Technical Note 446*." Which can be accessed at: *https://www.blm.gov*

Appendix E: Specialist Information

The Landscape and Visual Assessment was undertaken by Elmie Weideman from Create Landscape architecture and Consulting. Mrs Weideman is a qualified Landscape Architect and registered with the South African Council for Landscape Architects (SACLAP).

The following LVIA's have been completed by Mrs Weideman over the past five years:

- An ash dam facility for Eskom at Kriel power station, Mpumalanga;
- A wind farm for Just Energy near St. Helena Bay;
- A crude oil storage farm near Saldanha, Western Cape Province;
- Upington solar farm, near Upington in the Northern Cape province;
- Various concrete reservoirs located within the Olifants river catchment in the Limpopo and Mpumalanga Provinces;
- A 200 MW photovoltaic facility close to Westonaria;
- A 210 km, 400kV transmission powerline for Southern Africa Power Pool (SAPP) on behalf of Eskom, South Africa and Botswana Power Corporation;
- A 362km, 400kV transmission powerline for Southern Africa Power Pool (SAPP) on behalf of NamPower and Rede Nacional de Transporte de Electricidade of Angola;
- Approval for a mining right application near Vanrhynsdorp, Western Cape;
- Mixed area development near Cato Ridge, Kwazulu-Natal;
- Mokolo Crocodile Augmentation Project Phase 2, Limpopo Province;
- Mogalakwena PV Facility, Limpopo Province;
- Mossel Bay Energy 1000MW Gas Plant, Western Cape Province;
- Greenleaf Energy 1000MW Gas Plant, Western Cape Province;
- Application for mining exploration rights near Mahikeng, North West Province
- Application for mining rights near Dwaalboom, North West Province
- Seriti Kriel additional infrastructure and dragline project;
- Polihali Reservoir Associated Infrastructure and Access Roads Lesotho; and
- Venetia Mine PV plant and associated infrastructure, Limpopo Province.

All GIS mapping was compiled by Stephen Townshend from Townshend Geospatial, who has extensive experience in GIS modelling, viewsheds, photomontages and photographic experience for landscape and visual assessment.